

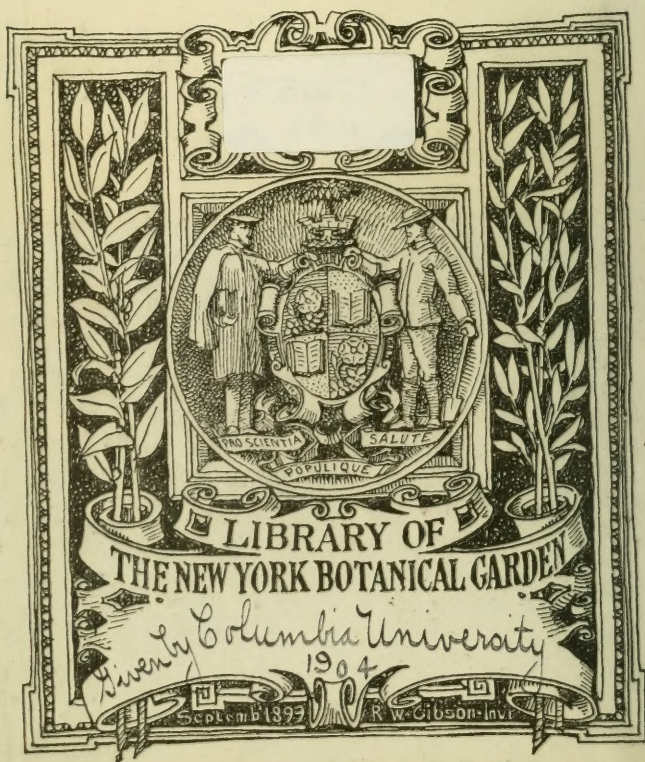
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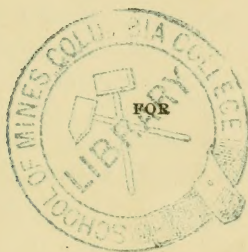


MONTHLY REPORT



OF

THE DEPARTMENT OF AGRICULTURE,



JANUARY 1870.

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THE DEPARTMENT OF AGRICULTURE

JANUARY 1870

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MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE, STATISTICAL DIVISION,
Washington, D. C., January 31, 1870.

SIR: I herewith report for publication statistics showing the average rate of wages of farm laborers in the several States of the Union; tabular statements of the average yield per acre of farm products for the year 1869, with the average prices per bushel for the same, January 1, 1870; notes on the growing crops of winter grain; a variety of extracts from the correspondence of the Department; together with articles on cotton as a surplus crop, the Michigan fruit region, tea culture in California, menhaden fisheries of Long Island, mineral food of plants, beet-sugar manufacture in the German Zollverein, farm capital, grape tests in Vine Valley, (New York,) live stock receipts at New York and Chicago, the prices of domestic wool for fifteen years at New York, exports of petroleum, meteorological tables and notes on the weather for December, &c., &c.

J. R. DODGE,
Statistician.

Hon. HORACE CAPRON,
Commissioner.

THE RATE OF WAGES OF FARM LABORERS IN THE UNITED STATES.

An investigation of the subject of agricultural wages was undertaken in December, 1866, through the statistical correspondents of this Department, and reports were received from nearly three-fourths of the counties of the United States. The results obtained were entirely satisfactory, furnishing internal evidence of carefulness and accuracy in the original statements. It was found that the average rate of wages in the United States was about \$26. The average, when board was furnished in addition to wages, was \$15 50, leaving \$10 50 as the average allowance for board. Thirty years ago the pay of farm laborers was estimated by Mr. H. C. Carey at \$9 per month with board.

It was also shown that while the white laborers of this country obtained \$336, the average English farm laborer received but \$182, including the value of all extras and allowances; and that while our labor has been subject to competition by millions of immigrants, its rate of reward has been gradually increasing, and the demand for it has outrun the supply.

A further examination of the same subject has just been completed, which shows that the rate of wages has not been greatly reduced dur-

ing the last three years, though the prices of agricultural and nearly all other products have declined materially. The agricultural laborer can now obtain nearly two bushels of wheat for the labor which would pay for one bushel at the close of 1866. In many branches of farm culture the cost of labor seems disproportionate to the cash value of its product, and the remuneration of the employed better than that of the employer. A further reduction may be expected as the finances of the country reach a specie basis.

The average rate of wages for all farm laborers, as established by these returns, is \$25 13; with board, \$15 88. A little less is paid to laborers boarding themselves than in 1866, and a little more to those who are boarded, the difference representing board being \$9 25 against \$10 50 in 1866.

The following is a statement of average wages for the different sections of the country, as compared with 1866:

| | December, 1866. | December, 1869. |
|----------------------|--------------------|--------------------|
| Eastern States..... | \$33 30 | \$32 03 |
| Middle States..... | 30 07 | 29 15 |
| Western States..... | 28 91 | 27 01 |
| Southern States..... | 16 00 | 16 81 |
| California..... | 45 71 | 46 38 |

Prices have increased in the South on account of the profits of cotton culture in the last few years, and have been fully maintained in California, by means of the introduction of new products, and of the large yields of wheat. The eastern and middle States have nearly maintained the old prices; while the western, confined mainly to the pursuits of agriculture, and dependent upon the profits of such labor, have soonest felt the effects of a decline in the value of farm products.

The central belt of States on the parallel of 40°, including the great States of Pennsylvania, Ohio, Indiana, Illinois, and Iowa, has suffered some decline in the rate of wages, though in unequal degrees. Iowa, with settlements and improvements rapidly progressing, very nearly maintains the high rate of 1866. Illinois, enriched by cattle-farming, and pork production, stands next upon the list. Pennsylvania, aided by its greater variety of industries, including manufactures, shows about the same reduction as Illinois; while in Indiana and Ohio, where the crop of wheat was so reduced by winter-killing in 1866, and the corn by drought in 1867, a greater decline in wages is naturally shown.

The following is a statement of the present average rate of wages in these States:

| | 1866. | 1869. |
|-------------------|---------|---------|
| Pennsylvania..... | \$29 91 | \$28 68 |
| Ohio..... | 28 46 | 26 35 |
| Indiana..... | 27 71 | 25 42 |
| Illinois..... | 28 54 | 27 32 |
| Iowa..... | 28 34 | 28 30 |

The effect of reliance upon a single crop is well illustrated by the returns from Minnesota, a State which, though young and sparsely settled as yet, is more completely occupied with wheat culture than any other. A comparison is given with Iowa, the leading crop of which is wheat,

supplemented with a great variety of other products of agriculture and horticulture:

| | Iowa. | Minnesota. |
|--------------|---------|------------|
| In 1866..... | \$28 34 | \$31 65 |
| In 1869..... | 28 29 | 28 61 |

The effect of diversion to other industries, whether mining or manufacturing, in providing markets for agricultural produce, is shown in the high wages paid in Kansas and Nebraska, and the Pacific States and Rocky Mountain Territories. Overland transportation, military occupancy, expeditions of hunters, explorations of science, railroad building, as well as mining itself, all conspire to render prosperous the business of agriculture, with such effect that the gold digger and silver miner remain poor, while the farmer and gardener acquire wealth. In Nebraska, in 1866, labor obtained thirty-five per cent. more than average wages, and in Kansas, an older State, with more agricultural competition, ten per cent., while California paid about sixty per cent. above the average rates.

Three years of settlement and rural activity have done much toward making exclusively agricultural States of Kansas and Nebraska, with a rapid reduction of the rate of labor. The same causes continuing to operate, and the more distant West becoming self-sustaining, prices must still further recede, even below the average rate for the country, unless some portion of the population shall cease to be producers and become consumers only. The idea of exportation of the raw products of agriculture to the Old World from the heart of the American continent, as a source of wealth for an entire State, should have its origin in an insane asylum, and if carried into practice would make the county infirmary the principal local institution. The reduction alluded to is as follows:

| | Kansas. | Nebraska. |
|--------------|---------|-----------|
| In 1866..... | \$31 03 | \$38 37 |
| In 1869..... | 28 96 | 33 25 |

New England has a thin, hard soil, requiring for cultivation more than double the labor that is needed in the West. Yet the growing of vegetables and fruits for local markets in manufacturing villages is profitable, and enterprising cultivators make a living and even a competency from very small areas. The following is the average for New England, compared with that for the Ohio Valley, including Ohio, Indiana, and Illinois:

| | Question 1.* | Question 2. | Question 3. | Question 4. |
|------------------|--------------|-------------|-------------|-------------|
| New England..... | \$32 09 | \$20 50 | \$37 89 | \$26 10 |
| Ohio Valley..... | 26 36 | 17 15 | 31 10 | 21 27 |

* Question 1. Average wages per month (without board) of farm laborers hired for the year. Question 2. Average wages per month (with board) of farm laborers hired for the year. Question 3. Average wages per month (without board) of farm laborers hired for the season or a portion of the year. Question 4. Average wages per month (with board) of farm laborers hired for the season or a portion of the year.

A comparison of the manufacturing county of Hillsborough, in New Hampshire, in which are located Manchester, Nashua, and many other manufacturing towns, with the average for the State, furnishes a strong confirmation of similar views:

| | Question 1. | Question 2. | Question 3. | Question 4. |
|-----------------------------|-------------|-------------|-------------|-------------|
| Hillsborough County..... | \$40 00 | \$25 00 | \$45 00 | \$30 00 |
| State of New Hampshire..... | 32 66 | 22 16 | 39 83 | 29 13 |

If large and fertile districts are to remain purely agricultural, the policy of certain southern men in opposing immigration may be wise, for a dense population in such circumstances will exist in poverty and misery; on the other hand, a true balance of the industries, in which the minerals and timber, with other primary products, shall be extended and perfected by the labor of man for the use of an advancing civilization, can enrich a large population in a far higher degree than the most flourishing agriculture, working alone, can aid a very sparse one.

As a purely industrial consideration, enforced by the logic of these labor returns, this system of manifold variety of labor, suited to the utilization of every original product of nature, and adapted to every capacity, preference, age and sex, is to be recommended to the South and West, as essential to their future growth and continued prosperity. Neither exemption from taxation nor political combinations of sections can avail to avert the ultimate consequences of a single course of exhaustive cropping, or of failure to use the untold wealth of nature which God has scattered in rich profusion, and to employ the varied capabilities of human dexterity and strength which is so often left to the disorganization and decay of idleness and disuse.

In 1866, an excitement upon the subject of cotton had made freedmen's wages high. In the Atlantic States, where recuperation had actively commenced, prices were higher than in the more western cotton States, which were slower in starting with reconstructed labor, but more rapid in recovery, on account of the superior quality of their soil. The result is now seen in an actual advance in prices in the following States, while a decline is shown in the other cotton States:

| | 1866. | 1869. |
|------------------|---------|---------|
| Alabama..... | \$13 40 | \$15 19 |
| Mississippi..... | 16 72 | 17 11 |
| Louisiana..... | 20 50 | 21 37 |
| Arkansas..... | 24 21 | 25 25 |

In Arkansas there is a large element of white labor, which increases the average.

Table showing the average rate of wages of agricultural labor per month, when employed either for the year or season, from the returns of statistical correspondents made in December, 1869.

| States. | 1866. | 1869. | | | |
|---------------------|---|---|--|---|--|
| | Per month, for the year, (without board.) | Per month, for the year, (without board.) | Per month, for the year, (with board.) | Per month, for the season, (without board.) | Per month, for the season, (with board.) |
| Maine..... | \$27 00 | \$26 25 | \$16 50 | \$31 00 | \$21 44 |
| New Hampshire..... | 32 74 | 32 66 | 22 16 | 39 83 | 29 13 |
| Vermont..... | 38 84 | 32 40 | 21 40 | 39 00 | 27 28 |
| Massachusetts..... | 39 84 | 35 95 | 22 16 | 41 00 | 27 75 |
| Rhode Island..... | 34 40 | 32 25 | 20 00 | 38 00 | 25 50 |
| Connecticut..... | 34 25 | 33 00 | 20 75 | 38 50 | 25 50 |
| New York..... | 29 57 | 29 28 | 18 64 | 34 29 | 23 05 |
| New Jersey..... | 32 27 | 32 11 | 19 02 | 34 38 | 22 47 |
| Pennsylvania..... | 29 91 | 28 68 | 18 05 | 33 00 | 22 21 |
| Delaware..... | 24 93 | 22 00 | 13 00 | 25 00 | 17 50 |
| Maryland..... | 20 36 | 21 55 | 12 00 | 24 70 | 15 29 |
| Virginia..... | 14 82 | 15 28 | 9 65 | 17 83 | 12 55 |
| North Carolina..... | 13 46 | 12 76 | 7 91 | 14 98 | 10 05 |
| South Carolina..... | 12 00 | 11 54 | 7 34 | 13 47 | 9 81 |
| Georgia..... | 15 51 | 14 70 | 9 70 | 17 66 | 12 75 |
| Florida..... | 18 00 | 16 10 | 10 91 | 21 25 | 14 00 |
| Alabama..... | 13 40 | 15 19 | 10 52 | 17 57 | 12 70 |
| Mississippi..... | 16 72 | 17 11 | 11 21 | 20 08 | 16 86 |
| Louisiana..... | 20 50 | 21 37 | 12 62 | 27 08 | 18 46 |
| Texas..... | 19 00 | 18 83 | 13 21 | 21 16 | 16 97 |
| Arkansas..... | 24 21 | 25 25 | 16 60 | 27 14 | 18 66 |
| Tennessee..... | 19 00 | 16 81 | 11 00 | 19 52 | 13 95 |
| West Virginia..... | 25 35 | 21 39 | 13 87 | 25 83 | 17 62 |
| Kentucky..... | 20 23 | 18 84 | 12 57 | 21 34 | 14 89 |
| Missouri..... | 26 75 | 24 47 | 16 38 | 29 75 | 21 31 |
| Illinois..... | 28 54 | 27 32 | 17 69 | 31 04 | 21 28 |
| Indiana..... | 27 71 | 25 42 | 17 03 | 30 47 | 20 81 |
| Ohio..... | 28 46 | 26 35 | 16 74 | 31 78 | 21 72 |
| Michigan..... | 31 26 | 31 01 | 20 03 | 34 01 | 24 35 |
| Wisconsin..... | 30 84 | 30 08 | 18 47 | 34 00 | 22 83 |
| Minnesota..... | 31 65 | 28 61 | 17 94 | 34 84 | 23 54 |
| Iowa..... | 28 34 | 28 39 | 17 87 | 33 64 | 22 44 |
| Kansas..... | 31 03 | 28 96 | 18 38 | 33 46 | 22 75 |
| Nebraska..... | 38 37 | 33 25 | 19 18 | 38 33 | 25 70 |
| California..... | 45 71 | 46 38 | 28 69 | 57 08 | 36 25 |

BOARD OF FARM LABORERS.

The difference between wages with and without board is slightly less than in the investigation three years ago, except in the southern States, California, and a few of the northern States. The labor changes which the former section is undergoing will still further increase this difference. It is difficult, in fact, to estimate the cost of labor with board in that region, from the peculiar and mixed nature of labor contracts there, very few hiring by the month at a cash rate.

| States. | 1866. | 1869. | States. | 1866. | 1869. |
|---------------------|--------|--------|--------------------|--------|--------|
| Maine..... | \$9 56 | \$9 75 | Louisiana..... | \$8 08 | \$8 75 |
| New Hampshire..... | 10 76 | 10 50 | Texas..... | 6 28 | 5 62 |
| Vermont..... | 11 84 | 11 00 | Arkansas..... | 8 41 | 8 65 |
| Massachusetts..... | 16 58 | 13 79 | Tennessee..... | 6 42 | 5 81 |
| Rhode Island..... | 13 90 | 12 25 | West Virginia..... | 8 88 | 7 52 |
| Connecticut..... | 12 71 | 12 25 | Kentucky..... | 6 58 | 6 21 |
| New York..... | 10 25 | 10 64 | Missouri..... | 8 67 | 8 09 |
| New Jersey..... | 13 29 | 13 09 | Illinois..... | 9 22 | 9 63 |
| Pennsylvania..... | 11 07 | 10 63 | Indiana..... | 8 99 | 8 39 |
| Delaware..... | 11 68 | 9 00 | Ohio..... | 9 50 | 9 61 |
| Maryland..... | 7 60 | 9 55 | Michigan..... | 10 78 | 10 98 |
| Virginia..... | 5 46 | 5 63 | Wisconsin..... | 10 97 | 11 61 |
| North Carolina..... | 5 31 | 4 76 | Minnesota..... | 10 55 | 10 67 |
| South Carolina..... | 4 34 | 4 20 | Iowa..... | 9 47 | 10 52 |
| Georgia..... | 5 84 | 5 00 | Kansas..... | 11 22 | 10 58 |
| Florida..... | 5 88 | 5 19 | Nebraska..... | 13 73 | 14 07 |
| Alabama..... | 3 60 | 4 67 | California..... | 15 36 | 17 69 |
| Mississippi..... | 5 14 | 5 90 | | | |

DAY WAGES.

Table showing the rate of wages of agricultural labor per day, in transient service, from the returns of statistical correspondents, made in December, 1869.

| States. | Per day for transient service in harvest, (without board.) | Per day for transient service in harvest, (with board.) | Per day for transient service other than in harvest, (without board.) | Per day for transient service other than in harvest, (with board.) |
|---------------------|--|---|---|--|
| Maine..... | \$2 17 | \$1 65 | \$1 48 | \$1 05 |
| New Hampshire..... | 2 37 | 1 95 | 1 79 | 1 41 |
| Vermont..... | 2 46 | 2 00 | 1 76 | 1 28 |
| Massachusetts..... | 2 37 | 1 95 | 1 92 | 1 37 |
| Rhode Island..... | 2 37 | 1 75 | 1 73 | 1 18 |
| Connecticut..... | 3 00 | 2 37 | 1 87 | 1 37 |
| New York..... | 2 53 | 1 99 | 1 64 | 1 19 |
| New Jersey..... | 2 63 | 2 09 | 1 63 | 1 15 |
| Pennsylvania..... | 2 23 | 1 73 | 1 43 | 1 04 |
| Delaware..... | 1 87 | 1 50 | 1 30 | 95 |
| Maryland..... | 2 16 | 1 67 | 1 20 | 77 |
| Virginia..... | 1 48 | 1 13 | 80 | 55 |
| North Carolina..... | 1 37 | 1 04 | 74 | 49 |
| South Carolina..... | 1 15 | 90 | 70 | 50 |
| Georgia..... | 1 24 | 90 | 83 | 60 |
| Florida..... | 1 25 | 87 | 96 | 72 |
| Alabama..... | 1 24 | 95 | 86 | 61 |
| Mississippi..... | 1 56 | 1 27 | 1 10 | 90 |
| Louisiana..... | 1 54 | 1 13 | 1 04 | 83 |
| Texas..... | 1 58 | 1 26 | 1 16 | 84 |
| Arkansas..... | 1 67 | 1 40 | 1 36 | 1 02 |
| Tennessee..... | 2 10 | 1 59 | 1 05 | 68 |
| West Virginia..... | 1 78 | 1 29 | 1 14 | 79 |
| Kentucky..... | 1 83 | 1 38 | 1 10 | 77 |
| Missouri..... | 2 30 | 1 84 | 1 44 | 1 02 |
| Illinois..... | 2 34 | 1 94 | 1 50 | 1 13 |
| Indiana..... | 2 16 | 1 77 | 1 36 | 1 01 |
| Ohio..... | 2 15 | 1 72 | 1 44 | 1 05 |
| Michigan..... | 2 76 | 2 25 | 1 66 | 1 17 |
| Wisconsin..... | 2 45 | 1 96 | 1 56 | 1 15 |
| Minnesota..... | 2 90 | 2 36 | 1 64 | 1 18 |
| Iowa..... | 2 85 | 2 24 | 1 52 | 1 13 |
| Kansas..... | 2 08 | 1 63 | 1 56 | 1 12 |
| Nebraska..... | 2 41 | 2 00 | 1 62 | 1 26 |
| California..... | 2 82 | 2 04 | 2 13 | 1 50 |

FREEDMEN'S LABOR.

The general tenor of reports indicates a gradual improvement in the quality of freedmen's labor. The wild notions that freedom is synonymous with idleness and that a free farm well stocked is an incident of suffrage are generally discarded by the colored man. The trial of independent farming without capital or foresight has so often resulted in total failure and comparative destitution and suffering, that only a very few, whose energy has purchased success, or those who prefer semi-starvation to regular work, still continue to cultivate land on their own account. Freedmen are more inclined than formerly to enter into contracts for their labor. The copartnership system still prevails very generally—"working on shares" as it is commonly called. It is a pernicious system, is becoming unpopular, (as we predicted a year or two ago,) and should be exchanged for fair wages as soon as the change can be made. Our correspondent at Tallahassee, Florida, says: "Most of the planters of this county keep up the ruinous plan of hiring laborers for a portion of the crop, giving generally one-fourth and board, or one-third without board." Among the objections to this system are the following:

1. It is not a voluntary association from similarity of aims and in-

terests, but an unwilling concession to the freedman's desire to become a proprietor, or an inability to make prompt payments of wages in cash.

2. It is a complicated copartnership, opening the door to fraud on one side, and unfaithfulness and desertion on the other.

3. It is not equitable between the freedmen, as it renders impossible a proper discrimination between the industrious and the idle, the dexterous and the incapable.

4. It leaves uncontrolled and almost undirected those who have never been subject to self-management or self-restraint.

5. It almost invariably inspires exaggerated expectations, leads to improvident drafts upon an uncertain future income, and ends in disappointment and discouragement.

6. It debars the proprietor from exercising a control over the plantation, and its operations essential to present success, and the permanent improvement of the estate.

The whole history of cotton production in the past four years attests the importance of these and other objections to the share system. It is satisfactory neither to employer or employed. The best labor contract is the simplest—stipulated wages for faithful service, which should be paid promptly as agreed in cash, with an equitable portion reserved to the end of the year, both to secure the planter against having his cotton left unpicked, and to give the freedmen a surplus for accumulation, or the supply of other than daily wants.

The present contracts are various. On rich lands the prevailing agreement makes labor alone equivalent to one-fourth of the crop; labor and rations one-third of the crop; labor, rations, and forage for horses or mules, one-half of the crop. The laborer "finding himself" and getting one-third of the crop, also has a cabin to live in, and sometimes firewood, garden, and pasture for a cow. On poor land a third is sometimes given for labor alone. Occasionally the bare land is rented for a third of the crop. Perhaps the plan adopted in the largest number of cases is the furnishing of plantation, fixtures, stock, and forage for two-thirds of the crop, labor obtaining one-third, subject to charges for provisions advanced for rations.

Extra labor is obtained for cotton-picking, and paid at the rate of fifty to seventy-five cents per hundred pounds of seed cotton in the Atlantic States, and at seventy-five cents to one dollar per hundred in the more western States, where labor is scarcer and the yield more abundant.

Rice, in Glynn County, Georgia, is harvested and stacked at a cost of about \$2 40 per acre, and is conveyed from the fields and stored at \$2 per acre, and is threshed by steam at about six cents per bushel. The rough rice bearing the outside hull is then sent to be milled into clean rice, ready for market.

Rice is a specialty in Georgetown County, South Carolina. All other provision crops are insignificant, and no other grain is raised for market. Drainage being a prerequisite to such cropping, a strong force is required for heavy work in ditching and embanking. For these purposes Irish are economically employed during the winter months at twice the compensation of colored laborers. They receive \$1 50 per day, working from sun to sun, or \$35 per month with board. Cultivation and harvesting are done by colored laborers. The threshing is mostly done by steam; in few cases by horse-power; and occasionally by the tedious and expensive method of the flail. Threshing-mills are found on all the large estates, and are run by freedmen. Freedmen contracting by the year receive \$13 per month cash, with accommodations for

themselves and families, a garden spot, and one to three acres of land in addition, receiving no food provision. When hired by the day, they receive \$1, without board, for about six hours work. Hoe hands receive fifty cents per day, without board, and are never employed by the season.

In sugar plantations, fifty cents extra is given for night work in grinding cane.

A great loss to agricultural production results from the assertion by freed women of what they assume to be the right of woman to a living without labor. At present no industry is available for income except field service, as cultivating or picking cotton, which is light and healthful, and to which they are accustomed; but they imagine that to be free means to be idle, to dress, to gossip, and to ape the style of those of superior fortune.

In portions of Virginia, as Princess Anne County, where women constitute a considerable proportion of farm laborers, fifty cents per day, or twenty-five cents with board, is allowed for their service. They will not hire either by the month or year.

It is evident that the disinclination of women to labor in the field, and the inefficiency of the men from being left to their own management under the share system, have limited the production of cotton and other crops. The correspondent at Arkansas Post, James H. Moore, sends records of cotton picking by thirty-five men and women and children in 1859, showing an average of 10,291 pounds picked by each in fourteen weeks, equivalent to eleven bales of four hundred pounds each. He states that in 1869 nearly the same number of hands, on the same land, did not average more than one-third of that amount. One of the hands, "Guy," in 1859, picked 12,461 pounds in fourteen weeks; and in 1869, but 3,646 pounds in fifteen weeks. "Sarah," in fourteen weeks of 1859, picked 8,761 pounds; and in sixteen weeks of 1869, but 3,519 pounds. He says the reduction is upon a similar ratio along the Arkansas River; and, if the same elsewhere, assumes that the present force of colored laborers do not pick more than 1,000,000 bales of cotton.

From data received from the entire cotton belt, it is evident that more than half of the crop is cultivated and gathered by blacks; yet it is undeniable that a considerable portion of it is now made by white labor, and the proportion is increasing. The time will probably come when much the larger portion will be the product of white labor.

HARVESTING AND GARNERING.

In addition to the inquiries concerning wages of labor paid by the day or month, the following were included in the circular:

Price, per acre, of harvesting and stacking wheat, including all the labor of men and horses.

Price, per bushel, of threshing and separating wheat.

Price, per bushel, of threshing and separating oats.

Price, per bushel, of husking and cribbing corn.

Price, per bushel, of shelling corn.

Price, per acre, of cutting, curing, and stacking hay.

Price, per acre, of cutting hay only.

The results of the returns, so far as they admitted of tabulation, are presented in the following tables, from which it appears that the average price per acre of harvesting and stacking wheat is \$3 25. The apparently low rate in California, where labor is well paid, is due to the

fact that large areas are harvested by labor-saving modes, and especially by the employment of "headers," which leave most of the straw standing. The cost of cutting, curing, and stacking hay varies with the character of the surface and rate of yield, and averages \$4 51 in New England, \$3 76 in the Middle States, \$3 22 in the South, and \$2 93 in the West. The average cost of cutting is \$1 04. The average cost of husking and cribbing corn is six cents and two mills; in the West, six cents and nine mills. In the South, the prices named are nominal, the "shucking" being done as an evening frolic, at the cost of refreshments or a supper, or, in some cases, "supper and plenty of whisky." The average cost of shelling corn is four cents and five mills.

In the threshing of grain the ancient flail has been discarded, except in a few localities and for small patches, for horse-power threshers and separators, and to an increasing extent for steam threshers. Yet the most primitive modes of threshing are reported. In Conejos County, Colorado, where a threshing machine cannot be found, the custom prevails of hauling wheat and oats to a threshing floor of earth and treading out the grain with horses, substantially in the mode of three thousand years ago.

The threshing machines employed are operated, some by a single horse, some by two horses, some by four, but oftener, in grain-growing sections, by eight or ten horses. An equal or larger number of men are required to run the machine and make proper disposition of the straw and grain. A part of these are provided by the operator, and the remainder are furnished by the farmer, who invariably feeds the horses and boards the men. The itineracy system is followed by the proprietor of the machine, which makes a circuit of the neighborhood, and does the threshing and cleaning for scores of grain-growers. While most threshing is done by professional threshers, many farmers run their own machines. Unless a man finds difficulty in getting the work done at the proper time, it is found unprofitable to keep a machine costing hundreds of dollars idle for fifty weeks in the year.

The rate is by no means uniform, being higher in thinly settled regions, with small lots of wheat or other grain, and a minimum charge is designated for setting the machine when the lots are too small for fair pay at the bushel rate. In the principal wheat-growing districts, the rate per bushel is five or six cents, and ranges to seven, eight, or ten cents. The actual cost is increased by the expense of extra "hands," their board, and the feed of horses. Another mode of compensation is by levying a toll of a certain percentage of the crops, after the manner of millers. This is sometimes one bushel in ten, and from that high rate to the other extreme of one bushel in thirty-three, or from ten to three per cent.

In Maine a toll of from one-tenth to one-sixteenth is taken, and the thresher usually furnishes two men and a pair of horses with the machine. In Hillsborough and in Sullivan County, New Hampshire, six dollars per day is charged for a small machine with two horses and two men; in other counties, from eight to fourteen cents per bushel for wheat, and from eight to ten for oats. In Essex and Orange, Vermont, ten cents for wheat; in Bristol, eight cents; and in Addison, a toll of one-fourteenth. In Massachusetts and Connecticut, where little grain is grown, prices are higher—toll of one-eighth being charged in some places. In Tolland County, Connecticut, eighteen cents per bushel for wheat, and in Hartford County twenty-five cents.

In the larger wheat-producing counties of New York 5 cents per bushel is charged for wheat, and $2\frac{1}{2}$ to $3\frac{1}{2}$ for oats; in others, higher prices; in

Westchester, \$12 per day for machine; in Delaware, one-twelfth of the wheat. A steam thresher is reported in Seneca, nominally six horse-power, costing \$800, requiring 700 pounds of coal per day, and threshing 400 bushels. In New Jersey, the share for threshing varies from one-fourteenth to one-twentieth. Threshers generally furnish two horses and two hands; a few larger machines require more service of men and horses. In Pennsylvania a wide variety of contracts exists, the price per bushel ranging, according to the amount of grain and the proportion of teams and men furnished by the thresher, from 4 to 10 cents.

In Virginia, where a machine and four to six horses and three men are furnished, the charge is one-tenth or one-twelfth; in most of the counties small machines are in use, and not more than two men and two horses supplied, for one-twentieth, oftener one-twenty-fifth, and sometimes one bushel in thirty-three. A cash rate per bushel is rarely paid. In the Carolinas and Georgia higher rates obtain, from one-eighth to one-fifth; in North Carolina, in some cases, one-twentieth. A few steam machines are reported in these States. An average capacity of threshers in this region is about 200 bushels per day.

In Alabama the toll is one-tenth to one-fourteenth; in Mississippi, one-tenth to one-twelfth; in Texas, still higher, one-seventh to one-tenth. In Tennessee the charge varies from one-tenth to one-twentieth, according to the amount of power and labor furnished by the thresher. In Kentucky the western custom of fixing a rate per bushel prevails, which ranges from 4 to 10 cents.

In Ohio, Indiana, Illinois, Michigan, Iowa, Minnesota, and other western States, eight and ten horse-power machines are in common use. In the majority of cases the thresher furnishes four to six horses and three men, the farmer furnishing, on an average, four horses and six to ten men, the larger number of hands being required when the straw is stacked—threshing 300 bushels of wheat, or 500 bushels of oats per day. In a few counties in each of these States steam power is obtaining the ascendancy, doing nearly double the amount of work, the price per bushel averaging a very little higher than that of threshing by horse power.

In Missouri the charge for threshing varies from 5 to 10 cents for wheat, (in a majority of cases 7 to 8 cents,) and from 3 to 5 cents for oats. Often the thresher furnishes all the horses, charging the higher prices mentioned. Steam power has been introduced to some extent.

In Utah a toll is taken for threshing wheat of one-seventh to one-twelfth; and about the same rates prevail in other Territories, though some reports from Montana place the cost per bushel at 50 cents, and one in New Mexico gives 60 cents. In California the price per bushel ranges from 4 to 10 cents.

Neither the price per bushel, nor the share of grain given, represents the total cost of threshing and cleaning. The labor of extra men and horses, and the board and forage, cost as much as the compensation of the thresher—making the average cost, instead of 6 to 8 cents, at least 12 to 15 cents per bushel.

The following are the tabulated results of the returns relative to harvesting and cleaning grain:

Table showing the average prices per acre of harvesting and stacking wheat and hay, and per bushel for husking and cribbing and of shelling corn, from the returns of statistical correspondents made in December, 1869.

| States. | Price per acre of harvesting and stacking wheat, including all the labor of men and horses. | Price per acre of cutting, curing, and stacking hay. | Price per acre of cutting hay only. | Price per bushel of husking and cribbing corn. | Price per bushel of shelling corn. |
|---------------------|---|--|-------------------------------------|--|------------------------------------|
| Maine..... | | \$3 35 | \$1 22 | 05.0 | 03 |
| New Hampshire..... | | 4 00 | 1 29 | 06.2 | 04.3 |
| Vermont..... | | 2 25 | 0 87 | 09.6 | 04 |
| Massachusetts..... | | 5 81 | 2 04 | | |
| Rhode Island..... | | 6 12 | 1 48 | 10.2 | |
| Connecticut..... | | 5 50 | 1 50 | | |
| New York..... | \$3 70 | 3 13 | 1 01 | 08.6 | 04.1 |
| New Jersey..... | 3 69 | 3 66 | 1 28 | 06.2 | 03.3 |
| Pennsylvania..... | 3 96 | 4 03 | 1 20 | 07.5 | 03.5 |
| Delaware..... | | 5 00 | 4 00 | 04 | 05 |
| Maryland..... | 3 04 | 2 97 | 1 13 | 11.4 | 04.6 |
| Virginia..... | 2 15 | 2 28 | 1 09 | 07.3 | 05 |
| North Carolina..... | 1 71 | 2 46 | 1 16 | 05.1 | 03.1 |
| South Carolina..... | 1 50 | | | 03.5 | 04 |
| Georgia..... | 1 72 | 5 50 | 2 55 | 07.1 | 05.9 |
| Florida..... | | | | | |
| Alabama..... | 1 43 | 4 33 | 2 00 | 06.3 | 05.9 |
| Mississippi..... | | | | 05.6 | 06 |
| Louisiana..... | | | | | |
| Texas..... | 3 04 | 4 12 | 1 77 | 07.1 | 07.2 |
| Arkansas..... | 1 70 | 2 75 | 1 70 | 08 | 03 |
| Tennessee..... | 2 10 | 3 10 | 1 51 | 05 | 04.5 |
| West Virginia..... | 2 58 | 2 46 | 1 05 | 06.3 | 03.8 |
| Kentucky..... | 2 53 | 2 61 | 1 32 | 06.6 | 04.7 |
| Missouri..... | 3 74 | 2 63 | 0 93 | 08.3 | 04.8 |
| Illinois..... | 3 46 | 2 86 | 0 91 | 06 | 03 |
| Indiana..... | 3 03 | 2 46 | 0 94 | 06.5 | 04 |
| Ohio..... | 3 68 | 3 23 | 0 94 | 06.3 | 04.1 |
| Michigan..... | 3 15 | 3 60 | 1 10 | 05.2 | 04 |
| Wisconsin..... | 3 16 | 2 91 | 0 94 | 06.8 | 04.8 |
| Minnesota..... | 3 66 | 3 33 | 1 10 | 08.7 | 05.4 |
| Iowa..... | 3 18 | 2 55 | 0 84 | 06.2 | 03.7 |
| Kansas..... | 3 08 | 3 20 | 0 92 | 07.1 | 03.4 |
| Nebraska..... | 4 05 | 3 02 | 1 02 | 06.9 | 03.6 |
| California..... | 2 91 | 3 29 | 1 50 | 09.0 | 09.5 |

YIELD AND PRICES OF FARM CROPS.

The returns of home prices of farm crops as exhibited in the following tables show much larger reduction than was noted a year ago in many of the products of the farm. The fall in wheat has marked an era in the history of prices of this grain. In the New England States, where the prices ranged from \$2 to \$2 42, the averages now range from \$1 40 to \$1 83; in New York the reduction is from \$2 08 to \$1 37; in Ohio, from \$1 65 to \$1 03; in Illinois, from \$1 20 to 76 cents; in Iowa, from 95 cents to 52 cents.

The price of corn has fallen in New England from the average of \$1 42 to that of \$1 30; New York, from \$1 12 to \$1 03; Pennsylvania, from \$1 to 92 cents; while in Ohio the price has increased from 60 cents to 72 cents; in Illinois, from 43 cents to 57 cents; and in Iowa from 37 cents to 50 cents. The price of corn has increased throughout the West, except in Minnesota, Nebraska, and Kansas, where the local supply from

the crop of 1868 was insufficient, and where the corn production is beginning to increase in a degree somewhat commensurate with its comparative importance.

For prices of other crops reference is made to the tabulated returns.

The yield per acre has been reported in accordance with former returns of the principal crops, and may be studied in detail in the tables.

The returns indicate a decrease in the average of wheat in Illinois, Indiana, Michigan, New York, the Eastern States, and in the cotton States; about the same area in California, and a slight increase in other States. Other winter grains show a slight reduction in average.

The reports of condition of winter wheat are not generally favorable; the reduction in the Ohio valley, expressed as a percentage, ranging from 6 to 20 per cent. The winter has thus far been unfavorable to fall sown grain, but more will depend upon the remaining portion and the character of the spring months as a prognostication of the harvest. In Wisconsin, Minnesota, Kansas, Texas, California, and South Carolina an average condition of wheat is indicated; and all other States are below the average. The probabilities at present are certainly opposed to the prospect of another year of marked productiveness.

An increased average of barley is reported from Kentucky, Missouri, Indiana, Wisconsin, and Kansas. Its condition is little better than that of wheat throughout the Ohio valley and the northwest. The reduction is represented to be 13 per cent. in Missouri, 9 in Indiana, 8 in Illinois, 7 in Ohio, and 5 in Michigan.

Table showing the average price and yield per acre of the principal crops of the United States for 1869, and the area and condition of winter grain.

| STATES. | WHEAT. | | RYE. | | BARLEY. | | OATS. | | CORN. | |
|---------------------|--|---|--|---|--|---|--|---|--|---|
| | Average yield per acre in 1869, stated in bushels. | Average price per bushel on 1st of January, 1870. | Average yield per acre in 1869, stated in bushels. | Average price per bushel on 1st of January, 1870. | Average yield per acre in 1869, stated in bushels. | Average price per bushel on 1st of January, 1870. | Average yield per acre in 1869, stated in bushels. | Average price per bushel on 1st of January, 1870. | Average yield per acre in 1869, stated in bushels. | Average price per bushel on 1st of January, 1870. |
| Maine..... | 15.4 | \$1 83 | 17.7 | \$1 43 | 20.7 | \$1 14 | 30.5 | \$0 68 | 24.3 | \$1 27 |
| New Hampshire..... | 17.5 | 1 85 | 15 | 1 38 | 27 | 1 05 | 30 | 69 | 30 | 1 30 |
| Vermont..... | 18 | 1 57 | 16 | 1 45 | 23.8 | 1 34 | 35.6 | 67 | 34 | 1 40 |
| Massachusetts..... | 18 | 1 75 | 18.4 | 1 30 | 25 | 1 56 | 31 | 73 | 34.2 | 1 32 |
| Rhode Island..... | ..... | ..... | 14.2 | 1 40 | 23 | 1 28 | 31 | 71 | 25.2 | 1 28 |
| Connecticut..... | 17.5 | 1 40 | 12.3 | 1 38 | ..... | ..... | 33.7 | 73 | 31.2 | 1 30 |
| New York..... | 16 | 1 37 | 14.5 | 1 03 | 24.1 | 99 | 35 | 56 | 27.1 | 1 03 |
| New Jersey..... | 16.5 | 1 34 | 14.8 | 1 12 | ..... | ..... | 34.1 | 57 | 3.68 | 95 |
| Pennsylvania..... | 14.8 | 1 28 | 13.7 | 99 | 23.6 | 1 02 | 35.7 | 47 | 31.4 | 92 |
| Delaware..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Maryland..... | 11.8 | 1 30 | 12.3 | 97 | ..... | ..... | 19.8 | 51 | 20.2 | 73 |
| Virginia..... | 10.5 | 1 21 | 9.3 | 91 | 17.3 | 87 | 17.1 | 48 | 13.5 | 91 |
| North Carolina..... | 8.4 | 1 53 | 8.3 | 1 15 | ..... | ..... | 15.1 | 65 | 13.3 | 1 00 |
| South Carolina..... | 6.6 | 2 09 | 5.4 | 1 68 | ..... | 2 50 | 10.8 | 95 | 11.6 | 1 40 |
| Georgia..... | 7.4 | 1 65 | 6.5 | 1 51 | 13.8 | 1 83 | 12.3 | 95 | 10.3 | 1 21 |
| Florida..... | ..... | ..... | ..... | ..... | ..... | ..... | 13 | 1 37 | 10.4 | 1 45 |
| Alabama..... | 7.8 | 1 62 | 7.3 | 1 47 | 11.7 | 1 81 | 12.6 | 91 | 12.5 | 1 14 |
| Mississippi..... | 9 | 1 75 | 7.7 | 1 70 | ..... | ..... | 23.7 | 98 | 15.4 | 1 12 |
| Louisiana..... | 11.5 | 1 25 | ..... | ..... | ..... | ..... | 13 | 1 15 | 19.3 | 1 09 |
| Texas..... | 11.1 | 1 70 | 17.3 | 1 10 | 26.6 | 1 04 | 28.4 | 70 | 32.5 | 73 |
| Arkansas..... | 11.8 | 1 51 | 12 | 1 35 | ..... | ..... | 24.7 | 75 | 28 | 92 |
| Tennessee..... | 8.4 | 1 15 | 10 | 1 00 | 16.4 | 1 12 | 16.7 | 60 | 18.1 | 77 |
| West Virginia..... | 11.7 | 1 26 | 12.9 | 90 | 16.7 | 1 06 | 25.2 | 46 | 27.8 | 79 |
| Kentucky..... | 11 | 1 10 | 11.2 | 84 | 19.5 | 1 23 | 19.4 | 48 | 5 | 66 |
| Missouri..... | 14.1 | 80 | 16.9 | 69 | 23.1 | 1 12 | 33 | 40 | 30.6 | 60 |
| Illinois..... | 11.2 | 76 | 14.4 | 64 | 20.9 | 90 | 32.5 | 37 | 23.2 | 57 |
| Indiana..... | 14.4 | 93 | 15.5 | 76 | 22.9 | 1 03 | 29.5 | 44 | 23.2 | 70 |
| Ohio..... | 15.5 | 1 03 | 14.8 | 82 | 25.5 | 1 02 | 33 | 46 | 30.1 | 72 |
| Michigan..... | 15.2 | 97 | 16 | 73 | 24.2 | 85 | 35.4 | 49 | 28.9 | 74 |
| Wisconsin..... | 15.3 | 68 | 15 | 62 | 25.9 | 80 | 36.2 | 40 | 26.4 | 65 |
| Minnesota..... | 16.3 | 59 | 18.8 | 56 | 25.7 | 64 | 37.5 | 42 | 29.1 | 63 |
| Iowa..... | 14.7 | 52 | 16.1 | 52 | 26.5 | 61 | 37.3 | 35 | 23.2 | 50 |
| Kansas..... | 18.5 | 79 | 25.8 | 69 | 30.6 | 83 | 42.1 | 37 | 48.4 | 44 |
| Nebraska..... | 17.8 | 51 | 19.4 | 53 | 30.2 | 71 | 41.3 | 34 | 42.2 | 37 |
| California..... | 20.7 | 93 | 31.5 | 1 22 | 35.3 | 65 | 41.8 | 62 | 41.4 | 90 |

Table showing the average price and yield per acre of the principal crops, &c.—Continued.

| STATES. | BUCKWHEAT. | | POTATOES, (<i>Solanum tuberosum</i> .) | | POTATOES, (<i>Batatas edulis</i> .) sweet. | | LEAF TOBACCO. | | HAY. | |
|----------------------|--|---|--|---|--|---|---|--|---|--|
| | Average yield per acre in 1869, stated in bushels. | Average price per bushel on 1st of January, 1870. | Average yield per acre in 1869, stated in bushels. | Average price per bushel on 1st of January, 1870. | Average yield per acre in 1869, stated in bushels. | Average price per bushel on 1st of January, 1870. | Average yield per acre in 1869, stated in pounds. | Average price per pound on 1st of January, 1870. | Average yield per acre in 1869, stated in tons. | Average price per ton on 1st of January, 1870. |
| Maine | 21.6 | \$0 83 | 123 | \$0 52 | ..... | ..... | ..... | ..... | .91 | \$15 25 |
| New Hampshire | 22.5 | 82 | 150 | 45 | ..... | ..... | ..... | ..... | 1.06 | 15 00 |
| Vermont..... | 20.6 | 86 | 160 | 38 | ..... | ..... | ..... | ..... | 1.15 | 13 00 |
| Massachusetts | 11.5 | 1 06 | 106 | 68 | ..... | 1,200 | 26 | ..... | .99 | 24 42 |
| Rhode Island ..... | ..... | ..... | 98 | 68 | ..... | ..... | ..... | ..... | 1.09 | 21 75 |
| Connecticut..... | 16.2 | 1 22 | 108 | 63 | ..... | 1,450 | 27 | ..... | 1.43 | 18 00 |
| New York | 20.1 | 86 | 114 | 51 | ..... | ..... | ..... | ..... | 1.54 | 12 66 |
| New Jersey..... | 14.2 | 1 13 | 93.4 | 62 | 81 | \$1 29 | ..... | ..... | 1.50 | 20 20 |
| Pennsylvania | 16.4 | 93 | 102 | 60 | 80 | 1 22 | ..... | ..... | 1.41 | 14 85 |
| Delaware ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Maryland | 11.4 | 1 10 | 73 | 64 | 72 | 1 17 | 500 | 13.3 | 1.16 | 17 95 |
| Virginia | 10.7 | 87 | 50 | 69 | 53 | 1 55 | 418 | 10.3 | 1.46 | 15 41 |
| North Carolina | 30.2 | 71 | 74 | 80 | 76 | 71 | 508 | 13.7 | 1.44 | 12 11 |
| South Carolina ..... | ..... | ..... | 60 | 1 33 | 33 | 1 16 | ..... | ..... | 1.25 | 23 33 |
| Georgia ..... | ..... | ..... | 61 | 1 40 | 58 | 92 | 375 | 19.4 | 1.46 | 21 45 |
| Florida ..... | ..... | ..... | ..... | ..... | 101 | 63 | ..... | ..... | ..... | ..... |
| Alabama ..... | ..... | ..... | 63 | 1 80 | 63 | 87 | ..... | ..... | 1.37 | 26 25 |
| Mississippi ..... | ..... | ..... | 89 | 1 09 | 98 | 81 | ..... | ..... | 1.16 | 19 33 |
| Louisiana ..... | ..... | ..... | 90 | 75 | 76 | 60 | ..... | ..... | ..... | ..... |
| Texas ..... | ..... | ..... | 132 | 1 80 | 130 | 69 | ..... | ..... | 1.69 | 14 18 |
| Arkansas ..... | ..... | ..... | 76 | 1 00 | 109 | 99 | 750 | 13.7 | 1.33 | 12 60 |
| Tennessee | 6.2 | 1 03 | 50 | 73 | 49 | 94 | 548 | 13 | 1.39 | 20 34 |
| West Virginia | 14.2 | 93 | 82 | 57 | 72 | 1 23 | 707 | 13 | 1.44 | 11 17 |
| Kentucky ..... | ..... | ..... | 69 | 53 | 54 | 1 12 | 667 | 9.1 | 1.31 | 14 66 |
| Missouri | 21.1 | 81 | 115 | 47 | 101 | 1 23 | 992 | 10.6 | 1.77 | 11 17 |
| Illinois..... | 15.1 | 76 | 103 | 41 | 100 | 1 11 | 633 | 8.4 | 1.59 | 9 87 |
| Indiana | 12.5 | 83 | 106 | 44 | 76 | 1.29 | 731 | 9.6 | 1.49 | 10 52 |
| Ohio | 12.5 | 91 | 112 | 42 | 97 | 1.35 | 700 | 6.2 | 1.44 | 10 90 |
| Michigan | 17.7 | 79 | 155 | 37 | ..... | ..... | ..... | ..... | 1.50 | 12 80 |
| Wisconsin | 17.6 | 71 | 107 | 52 | ..... | ..... | ..... | ..... | 1.45 | 10 50 |
| Minnesota | 18.8 | 81 | 112 | 72 | ..... | ..... | ..... | ..... | 1.55 | 8 00 |
| Iowa | 16.7 | 82 | 123 | 51 | ..... | ..... | ..... | ..... | 1.86 | 7 79 |
| Kansas | 18.5 | 99 | 149 | 46 | 110 | 1 29 | ..... | ..... | 1.75 | 5 55 |
| Nebraska | 16.7 | 1 22 | 140 | 40 | ..... | ..... | ..... | ..... | 1.70 | 5 03 |
| California..... | ..... | ..... | 163 | 79 | 153 | 1.32 | ..... | ..... | 1.55 | 12 70 |

Table showing the average price and yield per acre of the principal crops, &c.—Continued.

| STATES. | SORGHUM MOLASSES. | | WINTER WHEAT. | | WINTER RYE. | | WINTER BARLEY. | |
|----------------------|--|---|---|---|---|---|---|---|
| | Average yield per acre in 1869, stated in <i>gallons</i> . | Average price per gallon on 1st of January, 1870. | Average amount sown compared with 1868. | Condition of the crop compared with an average. | Average amount sown compared with 1868. | Condition of the crop compared with an average. | Average amount sown compared with 1868. | Condition of the crop compared with an average. |
| Maine | | | 10 | 10.5 | 10.2 | 10.2 | | |
| New Hampshire | | | | | 10.1 | 10 | | |
| Vermont | | | | | | | | |
| Massachusetts | | | 9.6 | 9.3 | 10.1 | 10.1 | | |
| Rhode Island | | | | | 10.7 | 10.5 | | |
| Connecticut | | | | | 10.5 | 11 | | |
| New York | | | 9.5 | 9.3 | 9.2 | 9.3 | 10 | 9.2 |
| New Jersey | | | 10.6 | 9.9 | 9.8 | 9.9 | | |
| Pennsylvania | 83 | \$0 60 | 10.3 | 9.7 | 9.5 | 9.5 | 9.8 | 9.6 |
| Delaware | | | | | | | | |
| Maryland | 91 | 76 | 9 | 8.8 | 10.4 | 9 | | |
| Virginia | 65 | 66 | 10.2 | 8.8 | 10 | 8.9 | | |
| North Carolina | 66 | 63 | 10.2 | 9.7 | 10.1 | 9.7 | | |
| South Carolina | 29 | 82 | 10 | 10 | 10.8 | 10.1 | | |
| Georgia | 79 | 70 | 10.1 | 9.9 | 9.8 | 9 | 11.7 | 10 |
| Florida | | | | | | | | |
| Alabama | 71 | 83 | 9.8 | 9.7 | 8.7 | 9.8 | 9 | 10.2 |
| Mississippi | 91 | 1 00 | 7.8 | 9.3 | 9.5 | 9.7 | | |
| Louisiana | | | | | | | | |
| Texas | 98 | 80 | 9.6 | 10.3 | 10.6 | 10.4 | 10.5 | 10.5 |
| Arkansas | 64 | 76 | 11.1 | 9.8 | 10 | 10.6 | | |
| Tennessee | 65 | 67 | 9.7 | 9.5 | 9.7 | 9.5 | 9.8 | 9.8 |
| West Virginia | 110 | 69 | 11.5 | 9.7 | 9.8 | 9.5 | 7.6 | 9 |
| Kentucky | 77 | 57 | 11.5 | 9.9 | 9.5 | 10 | 10.1 | 9.6 |
| Missouri | 94 | 67 | 10.4 | 9.1 | 9.8 | 6.6 | 10.9 | 8.7 |
| Illinois | 90 | 67 | 9.2 | 8.9 | 9.9 | 10.8 | 9.2 | 9.2 |
| Indiana | 95 | 61 | 9.5 | 8 | 9.4 | 8.4 | 10.1 | 9.1 |
| Ohio | 95 | 73 | 10.2 | 8.9 | 9.6 | 9.4 | 9.9 | 9.3 |
| Michigan | 108 | 89 | 9.4 | 9.4 | 9.4 | 9.5 | 9.6 | 9.5 |
| Wisconsin | 60 | 71 | 10.3 | 12.6 | 9.5 | 12.1 | 10.5 | 10.2 |
| Minnesota | 81 | 92 | 10.4 | 10.5 | 11 | 10 | | |
| Iowa | 94 | 84 | 10 | 9.9 | 10.3 | 12.3 | | |
| Kansas | 120 | 68 | 15.1 | 11.6 | 12.9 | 10.6 | 11 | 10.6 |
| Nebraska | 133 | 83 | | | 14 | 10 | | |
| California | | | 10 | 10.2 | | | 9.6 | 10.2 |

NOTES ON WINTER GRAINS.

Erie County, N. Y.—The open winter has been unfavorable to wheat; on account of the wet fall a smaller breadth was sown than in 1868.

Washington County, N. Y.—The ground is bare; bad for winter grain.

Albany, N. Y.—Winter wheat was sown in good condition, and now looks green and promising.

Steuben County, N. Y.—Winter wheat and rye are looking well.

Burlington County, N. J.—Winter wheat made little growth last fall, but has grown some during the past few weeks.

Beaver County, Pa.—Wheat not as promising as at corresponding date last year.

Columbia County, Pa.—Insects have damaged wheat in this county; the fields, where not covered with snow, present quite a nude appearance.

Chester County, Pa.—Grain was put in late, and it had but little growth before the early winter set in; it is weak and in poor condition to endure our trying winters of freezing and thawing.

Butler County, Pa.—The changeable weather during the past two weeks has had a damaging effect upon winter grains.

Delaware County, Pa.—Wheat, though smaller than usual, is healthy, and has not suffered from freezing.

Cecil County, Md.—Wheat sown late, and much of it is barely up.

Talbot County, Md.—Wheat looking well, considering the late sowing and unfavorable condition of the ground.

Baltimore County, Md.—Wheat sown later than usual, but the plant is vigorous and healthy.

Clarke County, Va.—Ten per cent. less wheat sown last fall than in 1868, and it has not attained the usual size at this season, but it is green and healthy and not the least winter-killed.

Madison County, Va.—Wheat was sown late, and in many instances in badly prepared land. The cold weather of November prevented sprouting, though much that was kept back is now coming up. The condition of the crop is not promising.

Buckingham County, Va.—Though the land was not in good tilth, wheat came up very well, and there is now a good stand, though it is not yet sufficiently rooted to withstand severe winter weather.

Highland County, Va.—Wheat and rye look well. The best time for sowing wheat is in the early part of September. Deep-plowed fallow land makes a sure crop; late sowing in corn land is uncertain.

King George County, Va.—Wheat does not show well; it came up late, and has grown very little.

Botetourt County, Va.—Gloomy prospect for wheat, owing to the continued cold, dry fall.

Spottsylvania County, Va.—Wheat presents an average appearance. About one-third more fertilizers were used last fall than in 1868.

Chesterfield County, Va.—Wheat is very late, owing to cool weather in the fall; many fields hardly make a show.

Nelson County, Va.—One-third increase in acreage seeded to wheat; but the appearance of the crop is not as promising as last year at same date.

Surry County, Va.—Very little wheat sown last fall. Peanuts absorb almost all attention now. More rye than usual has been sown, chiefly for pasturage.

Jackson County, N. C.—Wheat is yet safe; now under four inches of snow.

Harnett County, N. C.—Winter grain presents an average appearance, but there is a decided decrease in acreage. An increased quantity of fertilizers has been used.

Tyrrell County, N. C.—Owing to failures in the wheat crop from rust, &c., many farmers have abandoned the culture, and will pay more attention to cotton.

Caswell County, N. C.—In consequence of the unusual amount of rain, the winter wheat is not promising.

Burke County, N. C.—Wheat and rye backward.

Pasquotank County, N. C.—Wheat in fair condition, but with reduced acreage.

Chowan County, N. C.—Wheat has grown slowly, and is backward for the season.

Madison County, N. C.—Winter wheat never looked better in this county.

Stanly County, N. C.—More wheat sown last fall than in 1868, and all small grain is in good condition.

Duplin County, N. C.—Good stands of wheat and rye.

Williamsburg County, S. C.—The damage to wheat the past year from rust has induced some farmers to abandon its culture. Those who have put in crops, prepared their land more thoroughly and planted earlier, experience, in some localities, having demonstrated that early maturity of the crop is the best safeguard against rust. Oats are receiving increased attention as a crop.

Fulton County, Ga.—A good stand of wheat.

Carroll County, Ga.—Farmers are making preparations to plant large crops of corn and oats, a policy that ought to have been adopted long ago.

Crawford County, Ga.—Wheat ground prepared better than usual, with a liberal application of home-made and commercial fertilizers. The crop was sown much earlier than usual, and has been comparatively exempt from the fly.

De Kalb County, Ala.—Our farmers still follow the old plan of sowing wheat after corn, plowing it in with a bull-tongue plow. Guano was tried on a small scale last year with good results.

Coryell County, Texas.—We have never before had such a fine prospect for winter wheat. Season favorable thus far.

Medina County, Texas.—Wheat and rye seeded late.

Red River County, Texas.—Wheat is looking well.

Bell County, Texas.—The high price of cotton, and the many failures of wheat, in consequence of the grasshopper, has lessened the acreage in small grains, and will increase the area in cotton and corn. Wheat looks unpromising on account of defective seed and culture.

Kendall County, Texas.—Season favorable for wheat; cotton will be extensively planted in the spring.

Burnet County, Texas.—Owing to failures of wheat crop for successive years, farmers have reduced their acreage in wheat one-half.

Williamson County, Texas.—Many farmers are abandoning the cultivation of small grains and raising more cotton.

Independence County, Ark.—Winter wheat is suffering from dry, cold weather. The preparation of soil for wheat last fall was more thorough than ever before practiced in this section.

Giles County, Tenn.—Wheat and rye were never more promising, attributable in a great measure to the superior manner in which the soil

was prepared for seeding. A large proportion of the failures in this section is owing to the slovenly mode of preparing the soil and the indifferent after-culture. Some farmers have bought grain drills, and are much pleased with them. Labor-saving machinery is in demand.

Monroe County, Tenn.—Though the fall was unfavorable for seeding a good breadth of wheat was put in, and thus far it is looking well.

Greene County, Tenn.—The early closing of fall weather prevented the sowing of as much wheat as was intended to be put in.

Robertson County, Tenn.—Wheat was well put in, but the early cold retarded growth, and prevented tillering of any consequence.

Putnam County, W. Va.—Season unfavorable for wheat, but it looks tolerably well.

Morgan County, W. Va.—Wheat was put in later than usual, yet it looks well, owing to favorable weather in December.

Braxton County, W. Va.—More than usual attention has been given to the cultivation of small grain. Wheat looks tolerably well; rye still better.

Nicholas County, W. Va.—At least twenty per cent. more wheat sown this season than usual; but the crop is not very promising, owing to dry fall and early freezing.

Jefferson County, W. Va.—Winter grain was put in with more than usual care, but generally late, and is not quite up to an average in appearance. A large area was seeded to rye.

Upshur County, W. Va.—On account of the drought wheat was sown late, and some of it got but little start before the winter set in.

Owen County, Ky.—No weather thus far to injure small grain.

Carroll County, Ky.—Wheat was sown late, and did not get a good start; but the winter has been favorable.

Mead County, Ky.—The usual quantity of wheat sown; but it had not more than peeped through the ground when the cold weather set in; hence it is very backward.

McCracken County, Ky.—About half the winter wheat in this county is well put in; the other half was put in on corn land not in good tilth.

Gallatin County, Ky.—Winter wheat in good condition.

Pettis County, Ky.—Wheat acreage decreased four-tenths, in consequence of large crop and low price of last year.

Vernon County, Mo.—Only a small increase in acreage of winter wheat, for the reason that vegetation was too heavy for plows to turn after the middle of September.

Moniteau County, Mo.—Wheat doing well thus far.

Holt County, Mo.—At least four times more winter wheat sown last fall than in 1868.

Franklin County, Mo.—Winter grain sown in September looks well; that sown late is very unpromising, especially wheat.

St. Francois County, Mo.—Wheat had hardly come up when cold weather set in; consequently it has not tillered much. The wheat put in with the drill looks better.

Pike County, Mo.—Winter grain in promising condition.

Mississippi County, Mo.—Wheat looks well.

Cass County, Mo.—The wheat acreage is double that of any previous year. A good portion of it on new sod, but it does not generally look well.

Stone County, Mo.—Winter grain in good condition.

Howard County, Mo.—Winter grain is looking bad. Barley has received little attention until this season.

Henry County, Mo.—Wheat backward, having been put in late.

Daviess County, Mo.—The winter has been favorable for wheat and rye.

Grundy County, Mo.—Wheat not promising; too much wet, and alternate freezing and thawing.

Stephenson County, Ill.—Owing to the unfavorable fall, much of the rye is scarcely out of the ground.

Union County, Ill.—The dry autumn prevented the wheat from springing up as quickly as usual.

Hancock County, Ill.—Wheat and rye in excellent condition.

Fayette County, Ill.—Less wheat sown last fall than for many years, on account of the low price of the grain. The winter thus far unfavorable.

Madison County, Ill.—The condition of winter wheat is fair, though it is backward and small.

Schuyler County, Ill.—Season unusually favorable for winter wheat. The crop was put in with care, much of the seed drilled in, and the ground well prepared.

Clay County, Ill.—Winter wheat not as promising as usual.

Winnebago County, Ill.—Winter grain was generally sown too late.

Menard County, Ill.—Wheat very promising.

Franklin County, Ill.—Owing to the dry fall, winter grain is not in as good condition as usual.

Brown County, Ind.—Wheat backward, owing to dry fall. About twenty per cent. increase in acreage.

Crawford County, Ind.—Owing to the dry weather, wheat has tillered but little. Rye looks better than wheat, having been sown earlier.

Madison County, Ind.—The season has been hard on winter wheat.

Posey County, Ind.—The dry fall was unfavorable to small grain; some failed to come up.

Warren County, Ind.—Wheat is somewhat backward.

Tippecanoe County, Ind.—Wheat unpromising all over the county, owing to the condition of the ground when sown.

Noble County, Ind.—Wheat unpromising.

Boone County, Ind.—The wheat sown broadcast is, much of it, uprooted by the frost; that drilled in is in better condition.

St. Joseph County, Ind.—Wheat is thin on the ground, owing to defective seed and the Hessian fly. The winter has been favorable thus far.

Martin County, Ind.—Wheat and rye sown late, but both are looking reasonably well.

Washington County, Ind.—Forty per cent. decreased acreage in wheat, and the condition is proportionally worse than last year at same date.

Lorain County, Ohio.—Wheat in average condition.

Lawrence County, Ohio.—Season too wet for wheat.

Wayne County, Ohio.—Some of the wheat was injured by the fly in October and November.

Logan County, Ohio.—Wheat severely injured by heavy frost succeeding the frequent rains in early part of December.

Henry County, Ohio.—Poor prospect for the coming wheat crop.

Coshocton County, Ohio.—Season favorable for wheat.

Lucas County, Ohio.—Wheat has a very small top growth, but is healthy.

Washington County, Ohio.—Wheat and rye very backward.

Wood County, Ohio.—The drought caused many farmers to omit the sowing of ground intended for wheat. Had the land been in condition, the area sown would have been fifty per cent. in excess of last year. The crop does not look as well as usual.

Brown County, Ohio.—Wheat that was sown early looks well.

Champaign County, Ohio.—Wheat acreage decreased because of the high price of labor and the low price of wheat.

Mercer County, Ohio.—Winter grain suffering on account of alternate freezing and thawing.

Livingston County, Mich.—Wheat sown late, and in consequence of the wet cool-weather, has made but little growth.

Lenawee County, Mich.—The fall and winter have been favorable for winter wheat.

Ottawa County, Mich.—Winter wheat is very even on the ground, but short in growth. The low price of this grain is drawing the attention of farmers to the necessity of raising more stock and less wheat.

Cass County, Mich.—The winter wheat is generally slender, but the winter has been favorable.

Muskegon County, Mich.—Not more than half the usual amount of winter wheat sown last fall, and that is not in promising condition.

Calhoun County, Mich.—Wheat has a broad strong leaf, giving evidence of a vigorous root and good preparation. Farmers sow less fallow land and more after barley and corn than formerly.

Douglass County, Wis.—The best wheat lands could not be sown last fall on account of constant wet weather; consequently very little winter wheat was sown, and that on light soils.

Rock County, Wis.—Winter rye very unpromising, owing probably to the immature seed sown.

Appanoose County, Iowa.—Wheat has been covered with snow ever since winter set in, and is thus far in good condition.

Johnson County, Iowa.—The wet season prevented as large a breadth of winter grain being sown as would otherwise have been put in.

Boone County, Iowa.—Winter wheat, rye, and barley have heretofore been almost total failures, and farmers have ceased to experiment in this direction.

Linn County, Kan.—Wheat sown in great breadth and looks well; soil generally in good condition.

Leavenworth County, Kan.—Wheat promising; was put in in fine condition.

Nemaha County, Kan.—Increased breadth of wheat sown; nearly all drilled or plowed in, and mostly put in earlier than usual; the ground was in excellent condition, and the crop is promising.

Atchinson County, Kan.—Prospect of winter grain decidedly good; drilling is considered the best mode of putting in the seed.

Clay County, Kan.—Wheat put in with the drill is superior in almost almost every instance.

Wyandott County, Kan.—The appearance and prospects of winter grain are unusually good.

Franklin County, Kan.—Winter wheat in favorable condition; it was sown earlier than usual, and generally put in with the drill.

Shawnee County, Kans.—All drilled wheat looks better than common. Drilled wheat yields about five bushels to the acre more than that sown broadcast.

San Pete County, Utah.—There is a decreased acreage of winter wheat, and the condition is not so promising as last year.

Ada County, Idaho.—Considerable winter wheat sown, and the crop is promising.

EXTRACTS FROM CORRESPONDENCE.

EXPERIMENTS WITH SEEDS.

Hon. John Bidwell, of Chico, California, makes the following report upon experiments with seeds received from this Department :

Having been favored by the Department with specimens of wheat and other seeds during the year, I hereby acknowledge the obligation under which your kindness has placed me, and present my report of results. The wheat consisted of the following varieties: Tappahannock, forty-six and one-half pounds; Rough Chaff, seven and one-half pounds; Talavera, six pounds; Polish wheat, seven and one-half pounds. The annexed table shows the time of sowing, area sown, yield, &c., of the three varieties named:

| Variety. | When sown. | Quantity sown. | Area sown. | Yield. |
|--------------------|---------------|-------------------|---------------|----------|
| | | Pounds. | Sq. rods. | Bushels. |
| Tappahannock | Jan. 27, 1869 | 46½ | 169.24 | 23 223 |
| Rough Chaff | Jan. 27, 1869 | 7½ | 40.02 | 6 100 |
| Talavera | Jan. 28, 1869 | 6 | 18.80 | 4.016 |

It will be seen that the Tappahannock was sown at the rate of forty-four pounds to the acre, and yielded at the rate of 21.96 bushels to the acre; the Rough Chaff, sown at the rate of thirty pounds to the acre, yielded at the rate of 24.38 bushels to the acre; and the Talavera, sown at the rate of fifty-one pounds to the acre, yielded at the rate of 34.18 bushels to the acre. The Polish wheat was sown about the same time, but, for several reasons, it was not deemed worthy of cultivation here, and therefore was not harvested.

The land used was a sandy loam, exhausted by ten to twelve years of constant cultivation, but a little manure had been unevenly scattered over it and plowed in. The sowing was unavoidably committed to inexperienced hands, hence the wheat was unevenly and too thinly sown. My rule has been never to sow less than sixty pounds, nor more than seventy-five pounds per acre, if sown in December—the average time for putting in wheat in this part of California. The earlier wheat is sown the better after the fall rains have wet the land and rendered possible the setting of the plows in motion. If practicable, then, wheat may be put in in November, when fifty pounds of seed per acre will suffice; the later the sowing the greater should be the quantity of seed per acre. My experience in this locality would suggest the following rules as to quantity of seed and time of sowing: when sown in November, fifty pounds of seed; in December, sixty pounds; in January, seventy pounds; in February, eighty pounds; in March, ninety pounds. The application of these rules to the experiments with the seeds sent from the Department would have produced very different results. The late sowing could not be helped, as the seed came late; the thin sowing had a bad effect, in permitting the weeds to spring up and overtop the wheat. Having started wrong, the drawbacks accumulated to the end of the chapter. Small patches of grain cannot be cut with a header, which is about the only harvesting implement now used in this (the Sacramento) valley. Cradles and sickles are seldom seen or used, and are soon to be numbered, it would seem, among the things that were. The weeds would have prevented the use of cradles, had such a thing been at hand. By dint of good luck a few old sickles were found, and a few old squaws to use them. Owing to the scarcity of hands during last harvest, these native women cut with the sickle and thrashed with sticks the wheat in question. (Even the flail is about obsolete and seldom seen.) Some of these same natives remember, however, how harvesting was done in the first settlement of this valley, dating back more than a quarter of a century—how wheat was cut with sickles by those who were fortunate enough to have such improved implements of agriculture; but in their absence, which was very common, with butcher knives, or scraps of old hoops, or with sticks split so as to form a sharp side or edge with which the dry and brittle straw could be severed. These creatures, always wasteful, were this year aggravatingly so, for they consider the gleanings their perquisites. In conclusion, I must not omit to mention the unfavorable season and consequent partial failure of the wheat crop—it being only about three-fourths of the usual yield. Had it been practicable to have sown these specimens early, say in December; had there been a proper quantity of seed per acre, thereby diminishing the amount of land but multiplying the number of stalks to a given area, which would have kept down the weeds; had the harvesting been carefully done; and, lastly, had the season been but ordinarily propitious, the result would have been widely different, and the following esti-

mate below rather than above the reality, namely: 'Tappahannock, forty-five bushels; Rough Chaff sixty; Talavera, fifty per acre.

Everything considered, the Tappahannock is, I think, the best of the three kinds. With careful cultivation on our best soils, the yield may go to fifty, and even sixty, bushels per acre. But, while it seems to promise so well, further experiment will be necessary to test its power to resist deterioration in this glowing climate. Some kinds of wheat, very good at first, soon lose their excellence, the grains becoming smaller and starchy. Such was the fate of the Sonora wheat. When first cultivated here it was plump, beautiful, and very productive; but it soon deteriorated, was discarded, and is now almost unknown. I do not allude to what is generally called the Sonora Club Wheat, which stands up and yields well, but makes inferior flour.

My conclusion is that, in the light of the experience just related, the Tappahannock, the Rough Chaff, and the Talavera wheat are a success, especially the first named.

The two varieties of oats—White Schonen, one pint, and Black Swedish, one pint—were received late and sown March 18, too late to expect anything like desirable results. Nevertheless, one kind, the Black Swedish, did very well; the other, only tolerably. I will endeavor to report more fully after next harvest.

The melon seeds sent, to wit: Phinney's Early watermelon; muskmelon—New White Japan, Achapesnorricher melon, Japan melon, and Cassaba melon, came to hand so late that it was a question whether or not to attempt to plant them, in view of the very early and dry spring which was then upon us, and May seemed turned into June. But, selecting a place where they could be reached by irrigation, they were planted on the 24th of May. Some failed to come up, others came up feebly, others were scorched and killed, and all were more or less affected by the hot weather; and this, in spite of irrigation, and contrivances to screen them from the rays of the sun. Had the planting been two or three weeks earlier, this would not have been necessary. This statement is to show that none of the melons named had a fair trial. Early planting was more essential to full development of quality than would have been climate, soil, or any other condition. Those that survived did so almost against hope; but having escaped, they grew slowly, and some became tolerably vigorous. Phinney's Early, said to be a "new variety" of watermelon, grew and produced fruit sufficiently to enable me to say that I do not deem it a very good kind. The New White Japan was admirable. It was somewhat longer than the common cantaloupe, and would average a little larger, and I am at a loss whether to style it a large cantaloupe or small muskmelon. Its quality, however, was excellent, and it was new; for it was different from any of the kinds in common use. Its excellence had the peculiarity of striking uniformity; they all came to the standard, and such a thing as a poor one was not found during their season, which was short in comparison with other melons, as they lasted but two or three weeks. I have often seen cantaloupes sweeter, but these were sweet enough, and never disappointed me.

The next in order was the Achapesnorricher melon, "a new and very superior green-fleshed muskmelon, from the Ionian Islands, represented as being very hardy," using the labels from the Agricultural Department. In planting, I endeavored to keep the labels correctly; and if so, then this was not a "green-fleshed" melon, but a very round, rough-ribbed, thick and solid yellow orange-fleshed melon. It never became soft like other varieties of muskmelons, and at last decayed without ripening to softness. This may not have been its appropriate climate, and, upon the whole, I did not have for it special estimation. The Japan melon did not amount to anything worthy of record. If the two last named should in the future develop into importance, I will report the fact. I must conclude with the Cassaba melon, and have purposely kept the best for the last. This is a green-fleshed muskmelon, not remarkable for size. The rind, though not exactly green, does not change to yellow. The flesh is thick, soft, and juicy, but to properly describe it, is more than I will attempt. Melons may be more saccharine, but this is delicious, and, as nearly as possible, perhaps completely, defines the word *delicious*! and I would not exchange it for any melon ever before seen, or for all other melons combined. If we have mixed the labels, this may be the kind from the "Ionian Islands," and not "from Smyrna." The former, (Achapesnorricher,) as represented, was a "green-fleshed" melon, and the seeds were considered very precious, their cost being stated to have been \$1 20 per pound in gold. Let the name be right or wrong, it is not important for my present purpose. Time will enable us to correct error in name, if any there be. This melon absolutely caps the climax, and leaves nothing to be desired.

William E. Baker, of Ickesburg, Perry County, Pennsylvania, makes the following report of experiments with seeds received from the Department:

Esteemed varieties, which were formerly our preference, were planted with those received from the Department, that we might have a known standard for comparison. Varieties not originally received from the Department are in *italics*; those from the Department are marked with a †.

†Fulmer's Forcing, †Early China, †Large White Kidney, *Valentine*, and *Giant Wax* beans were planted. The first and second prolific, but rough pods. †Large White Kidney moderately prolific, good for winter use, but not equal to small *White Bush* bean, grown here. *Valentine* is decidedly the best bush-bean for cooking in the pod which we have tried. *Giant Wax* has no equal among pole beans. †Long Smooth Blood beet, †Dwarf Blood beet, †Carter's Warden Mangel Wurzel, and †Vilmorin's Improved sugar-beets grow well, and are of ordinary quality. †Pine Apple Short Top beet, received in 1868, and †New Pine Apple Short Top, received in 1869, appear to be identical, and are the *ne plus ultra* among table beets. They are early, tender, handsome, well flavored, large enough, and of beautiful shape. The earliest planted are good any time during the summer, the fall, or the next winter—always tender—never stringy. †Snow's White broccoli proved to be a bushy, headless cabbage plant, three feet high, leaves long, slender, lyre form. †American Drumhead Savoy Cabbage is the best of its class. †Large Late Hardy Winter Drumhead Savoy cabbage has a larger name than head. †New Sprouting Dwarf Elm Savoy cabbage is of no account with us. Drumhead Savoy cabbage is similar to the American Drumhead Savoy, but not quite as exempt from rot. †Superfine Early cabbage is the best early variety that we have yet tried. †Large Brunswick Short Stem cabbage is pretty good, but liable to rot. †Schweinfurt Quintal cabbage is early, large, pretty good, but very liable to rot and fall from the stem. †Large Late Drumhead is the best winter cabbage. †Early Short French carrot, as received from the Department, is identical with the variety we have grown for years, and is the best yet tried. †Nantes Large Stump-rooted carrot is larger, but not equal for the table. †Dwarf White Solid celery is very good.

Sweet corn was ready for the table in the following order: †Narraganset, †Brill's Early Extra, †Burr's Mammoth, *Darling's Early*, †Stowell's Sweet corn, and †Boston Late Sweet corn. Narraganset is good but small; Brill's Early Extra no larger and scarcely as good; Burr's Mammoth large and good; Stowell's is the very best in quality; Darling's Early is hardy, good, prolific, and would be my selection if I could have but one variety.

†Long Purple egg plant produces smaller fruit than the *Large Purple*, but seems to be eminently hardy, quite early, and produces more fruit than the *Large Purple*. †Large Green Curled Ruffed endive grows luxuriantly and is pretty good. †Large White cabbage or Maderia lettuce has nothing to recommend it. †Ivery's Nonesuch lettuce is tender, and, from its upright growth, readily gathered while quite young. †Victoria lettuce is small, tender, and this season (a favorable one) made nice heads; it is soft and oily, rather than crisp and juicy. *Fellon's India Head lettuce* is the best we have tried. †Covent Garden Pickling, †Nuneham Park, and †Large Maderia onions were planted, for sets, with *Silver Skin* and *Yellow Strasburg*, Covent Garden Pickling, and †Nuneham Park made quite small sets; †Large Maderia was quite late and grew larger, but the *Silver Skin* and *Yellow Strasburg* made quite the largest sets, and ripened earlier.

The †Student parsnip is *best*, but much smaller than the *Large Sugar*, which is also very good, but different in flavor, being more sugary, and having more of the "*native parsnip*" taste. †Tom Thumb peas have nothing to recommend them but their dwarf habit. †Philadelphia Extra Early peas are the best early variety yet tried. Hubbard Squash has no equal, unless it be another of the same vine. I did raise one vine and one squash on it; but all others were destroyed by the squash bug, despite the most persevering efforts; about the first of September, while examining my vines, I found on the vine, at the base of several leaves, white, footless, fat, greasy-looking grubs, the largest of which were about one inch long. These I cut out carefully, and barely succeeded in saving part of my vine and one squash. All these grubs were on the vine at the base of the footstalks, (petioles.)

†Cedar Hill tomato is early and prolific, rather disposed to be wrinkled and ill-shaped, and not of as good quality as the †Tilden or *Maunpau*. The Maunpau is the most solid, middling early, good-flavored, and rather smooth, and keeps longer than any other known to me. The †Tilden is very smooth, solid, of good flavor, very prolific; the vine is very healthy, and altogether it is unsurpassed. †Carter's Imperial Hardy Purple Top Swede turnip I sowed as a common turnip, (*B. rapa*), and they are now under the snow and as thick as my little finger. The name (above) did not, to me, suggest a ruta бага, (*B. campestris*.)

The Excelsior oats are full ten days earlier than the common varieties. When they are threshed I will report the yield.

York County, Me.—The Arnautka spring wheat yielded eighteen bushels to the acre, four bushels better than any old seed. The Red Mediterranean winter wheat was sown September first in drills, four inches deep; it came up well, and did not winter-kill; product, fifteen bushels to the acre. The quart of Probstier barley returned twenty-four fold. I sowed one quart Schonen oats, and one of Black Norway; also, two

bushels of White Swedish oats. Reduced to acres, the product was: Norway, twenty-eight bushels, of thirty-two pounds; German, thirty-two bushels, of thirty-four pounds; Swedish, thirty-five bushels, of thirty-eight pounds. I have grown four crops of Swedish oats, each of which has been satisfactory. The several varieties of turnips have done well, yet none have excelled the Purple Top. The plant called kohlrabi grew to weigh ten pounds or more, and has attracted considerable attention. Last year I sowed one quart of Alsike clover seed; it grew to the height of three feet or more, with many branches, and has long and strong roots.

Alexander, Me.—Three pounds of the Arnautka spring wheat, received from the Department of Agriculture, was sown 26th of May, in twelve drills sixty feet long, about fifteen inches between the drills. Put on about two pailfuls of unleached wood ashes. Potatoes were the preceding crop, lightly manured. Threshed and cleaned up thirty-six and one-fourth pounds of nice plump wheat. If sown thinner, the crop would probably have been one-third larger.

Orleans County, Vt.—The Arnautka spring wheat, received from the Department, proved as early as any variety raised here; hardy and free from disease. Three quarts sown yielded about two bushels of nice wheat; the threshers called it the best they had seen. The Somerset oats from England ripened ten days earlier than other varieties here, but the birds shelled the grain, so that I did not get more than one-half bushel from a quart sown; but they are very heavy. The white Schonen oats ripened August 15, yielding well, and they are a desirable grain. The Black Swedish oats ripened September 12, which was very late. The Saxonian and Probstier barley are two rowed varieties, and are just alike while growing, so I have put them together; got two bushels from three quarts; very heavy grain.

Yields of grain in this county: Emery Cook, of Glover, raised one hundred and forty bushels of wheat on four acres. Thomas Baker, of Barton, raised one hundred and seventeen bushels of wheat on four acres. Willard Chamberlain raised twenty-one bushels from one and one-half bushels, sown on three-fourths of an acre. Horatio Nye raised forty-three bushels from two bushels of seed. E. H. and L. H. Nye, of Glover, raised forty-four bushels from two and a fourth bushels of seed. J. C. Chapman, of Barton, raised three hundred bushels of Norway oats from seven bushels of seed, and part of them at the rate of one hundred bushels per acre. Perley Hill, of Irasburg, raised four hundred bushels ears of corn from three acres.

Essex County, N. J.—Of all the varieties of turnip seed sent me last spring, the only kind which succeeded at all was the White Flat Dutch or White Strap Leaf. All the Swedish or yellow varieties proved complete failures, probably owing to the severe and protracted drought of August and September. My general experience is that the Red and White Flat Dutch or Strap Leaf are the only reliable kinds for this soil or climate, as I have never had any success with other kinds, though I have taken every pains in preparing the soil.

Washington County, Pa.—Mr. C—— sowed two and one-half quarts of Tappahannock wheat, and threshed sixty-eight pounds; not quite a bushel by measure. I sowed one quart of White Schonen oats, and harvested one and one-quarter bushel of grain, at the rate of sixty-four bushels per acre.

Nelson County, Va.—The Tappahannock wheat, introduced from your Department, seems well adapted to our climate, and gives general satisfaction. Should it continue to maintain its present standard; this

article alone will be worth more to our country than the cost of the Agricultural Department.

Randolph County, N. C.—The peck of Tappahannock wheat forwarded to my address by the Department in the fall of 1868 I gave to a farmer for experiment as directed, and he reports results as follows: "Sowed one peck of Tappahannock wheat on one-fourth of an acre of thin land (not manured) about the first of November; it grew finely, and was ripe on the 10th of June. Threshed it at the usual time; it yielded three bushels of excellent wheat, weighing sixty-seven pounds to the bushel."

Cherokee County, Ga.—W. Grisham, one of my assistant reporters, makes the following report of seeds received from the Department: Imperial round turnip, good, but not excellent; Fosterton Hybrid turnip, not desirable; Tipped Scarlet oval radish, excellent. Early Bassano beet, good; Carter's Warden Orange Globe mangel wurzel, good; New Pineapple beet, good; Imperial Sugar beet, very good; Kemp's Incomparable cabbage, Late Hardy Winter Drumhead Savoy, and the Jersey Wakefield cabbage, not suited to this locality. The Student parsnip, the Selected Scarlet carrot, and the James Scarlet carrot did not vegetate. Yokohama squash failed on account of drought. Early China beans, the Large White Kidney, and the Large Pale Yellow beans, very good. Carter's Early Prolific peas, excellent.

De Kalb County, Ala.—The Tappahannock wheat, sent me by the Department three years ago, has succeeded well. I am now engaging my next crop for seed. I sold out my last crop for seed in the fall, at \$2, when our common wheat was only \$1 25 per bushel. Guano tried on a small scale last year, broadcast on wheat, with good results.

Kendall County, Texas.—I planted, with great care, on the 7th of last December, a peck of Tappahannock wheat received from the Department. It came up beautifully and luxuriantly, but in the latter part of February, that which was not devoured by the grasshoppers was destroyed by the rust. The ramie also was tried, but is a failure in this county; it seemed to do better among weeds and grass than in clean and well cultivated patches. Of the garden seeds, the Drumhead Savoy cabbage beats Kemp's Incomparable; the Early York is also very good.

Marion County, Tenn.—Of the seeds received from the Department, Carter's First Crop pea, sown first of May, produced pods in one month; yield moderate. Advance pea, planted first of May, yielded pods in five weeks; yield heavy; pea sweet, tender, and large; a fine variety. Student parsnip is a fine variety. Deware's Fine Dark beet is excellent; sweet, tender, and prolific. Carter's Early cabbage produces well; white hard head, very good. Every indication shows the Short Stem cauliflower to be a fine variety. Owing to the lateness of the planting and the excessive dry summer, none of these seeds had a fair test.

Monroe County, Tenn.—The following are the results of experiments with seeds received from the Department: The Early Nocera and the White Lisbon onion were planted April 1st in beds well prepared and manured, and though the season was unfavorable both kinds grew finely, many of them large enough for table use. I consider them excellent. Phinney's Early, Black Spanish, and the Long Island watermelon were planted 16th of April; fruited early and profusely. The melons were rather small, but the meat was as fine as I ever saw. Phinney's is the best. The Early Bassano beet was planted 1st of April in well-manured beds; an early and good variety. Bossin lettuce did well, producing fine large heads, which remained tender later than any variety I have cultivated. Sandringham Superb White celery failed to come up; and of the True Hubbard squash, insects destroyed every plant in about

three weeks after they came up. McLane's Epicurean and Dunnit's First Early peas were both good, the latter first-rate, very prolific. Large late, hardy Winter Drumhead Savoy I consider of but little value—not a good head among them. The Vaugirard Winter Drumhead cabbage produced a good crop for the season; early and hardy; a good variety. Carter's Champion broccoli grew finely, and is very nice. Early Narraganset Sweet corn, planted April 12, did not produce a single well-matured ear, though planted in a good soil and cultivated. The season was too cold and backward for it. Cedar Hill tomato is a large and good variety; fruits early, and is very nice. Of the Student parsnip, not a seed germinated. The Hollow Crown or Sugar parsnip came up well and produced a good crop—a valuable accession. Long Surry and James's Scarlet carrot were planted 26th of April in a good soil, though not manured; both kinds did well for the dry season; one measured thirteen inches in circumference. Planted the Spanish turnip in ridges, with some care, sowing at two different times; few came up; too dry and hot.

Nicholas County, W. Va.—The Talavera wheat, one peck, sent me in October, 1868, was carefully sown as soon as received. It grew very finely, heavy strawed, but the midge nearly destroyed it. It is a large, tall wheat, too late for this climate.

Stone County, Mo.—From the Tappahannock wheat sent me last year I harvested a little over two bushels, which was again sowed in September last, and it looks well at this time, (December 25th.) The Black Swedish oats did well; from a quart I raised a bushel. The White Schonen oats did better; from a quart I raised one bushel and a peck. I will sow them again and report the result.

Cuyahoga County, Ohio.—Six quarts of Excelsior oats, received from the Department last spring, produced three and a half bushels, weighing forty-two pounds to the bushel.

Trumbull County, Ohio.—Five quarts of the Excelsior oats sent out by the Department produced two and a half bushels, forty-two pounds to the bushel. They grew splendidly. The Arnautka spring wheat grew and headed well, but it did not fill out.

Fond du Lac County, Wis.—The peck of Russian spring wheat received from the Department resembles in every particular a variety introduced here thirteen years ago, known as the Labrador wheat. It was condemned by millers as being too hard, and more like the hard portion of a kernel of corn than wheat.

I sowed the peck on one-eighth of an acre of ground, and harvested two and a quarter bushels, besides wasting at least four quarts that were scattered in adjoining wheat and fallen to the ground. Full yield, nineteen bushels per acre. The seed was very dark-colored, but at least one-third of the product is quite white and soft. It is my opinion that the next crop will be quite soft. It is a very hardy variety, but rather inclined to fall.

Only a few of the Danvers onion seed came up, but enough to prove them good for this locality. The Connecticut Red onion yielded at the rate of nine hundred and sixty bushels per acre.

Cherokee County, Iowa.—The Arnautka spring wheat received from the Department yielded nearly two bushels from four quarts. The season was rather too wet for it.

Lassen County, Cal.—The peck of Tappahannock wheat sent me yielded three bushels, and the farmer who sowed it says that one-half of the seed rotted. One pound of the Swedish oats yielded twenty-four pounds.

SWEET POTATOES, POULTRY, ETC., IN NEW JERSEY.

Salem County, N. J.—Our sweet potato crop was large, and the returns throughout that section of our county adapted to the culture of this crop have averaged about one hundred dollars per acre. I know of one farmer that leased sixteen acres, he furnishing the team and manure, and the lessees paid him one thousand three hundred dollars clear of all labor and other expense. One small farmer, the owner of twenty acres of superior truck land, not counting his own labor or the expenses of raising and marketing his crop of sweet potatoes, realized the sum of three thousand dollars therefrom.

Poultry is an item now with us, and there are cases in our county where the good housewife and her girls have realized over five hundred dollars in cash for their poultry. Owing to railroad facilities, milk, cream, and butter can now be sent to the Philadelphia market within two hours, and the returns therefrom to those who have made this "item" of produce are quite large. Three first-class cows, well cared for, will furnish milk, cream, and butter for a family of seven persons, and will, in addition, furnish for market a surplus of more than two hundred dollars in money. Land is at this time rather dull of sale, but wherever there is a good farm offered at public sale, a choice and well-cultivated tract, there are good bidders. One hundred and fifty dollars and upward per acre is not considered out of the way for property of this description. Stock is not high, but there is a fair demand for it. Let a good horse be heard of that can trot a mile in three or three and a half minutes, or is a superior roadster without such speed, and his owner will find no difficulty in obtaining a purchaser at a high figure. The same rule applies to an extra pair of mules, oxen, or a first-class cow.

CATTLE DISEASE IN MONROE COUNTY, N. Y.

Monroe County, N. Y.—The cattle disease reported as existing in this county has now almost, if not entirely, disappeared. The disease commences with small pustules between the fetlock and hoof, which increase in size till they break and a thick matter runs from them, and for some time afterward there remains a running sore. These pustules continue to spread toward the body, and finally to the udder, and may cause a cow to give bloody milk—the same as any other sore upon this part. The pustules, however, soon heal, and, even if nothing is done to the animal, cause but little loss in flesh, and only for a short time a diminution in the quantity of milk.

Many persons think this the old cow-pox, but most people attribute it to the work of some insect, in connection with the unusually cold and wet autumn. It appears to be somewhat worse when cattle are pastured upon low, wet land, and exposed to muddy places to lie down upon at night, and less severe when cattle are stabled.

The remedy is very simple. A mixture, in about equal proportions, of sulphur and lard rubbed upon the pustules as they appear, and one or two doses of sulphur given inwardly, has always in a short time effected a cure.

I doubt if this disease has in any instance proved fatal to an animal. Some cows were said to have died with it, but, on inquiry, I have always found that they had some other disease in connection with it.

WHEAT CULTURE IN LEBANON COUNTY, PA.

Lebanon County, Pa.—The limestone region of this county averages about twenty-one bushels of wheat per acre; gravel and slate region about fifteen bushels per acre. Earliest sown wheat (sown first week in September) was best, drilled wheat averaged on best farms twenty-five bushels to the acre; better by two bushels to the acre than hand-sown. Land early prepared for sowing and allowed to settle well before seeding is believed by our best farmers to be a great advantage over sowing in loose, fresh-plowed ground, especially in dry falls.

COTTON CULTURE IN NORTH CAROLINA.

Pasquotank County, N. C.—Cotton is a staple crop in this section of North Carolina, and good farmers have realized over \$60 per acre, clear profit, on their crop of this year. Added to this, the land in this county, unlike anywhere else, improves rapidly from raising cotton upon it; and the same land may be cultivated in cotton for thirty or fifty years in succession, and will get richer all the time. The same is nearly true in regard to corn, if pease are sown at the last working.

PEANUTS IN NORTH CAROLINA.

Beaufort County, N. C.—One farmer had five hundred acres in peanuts, but the season was too dry; yield about thirty bushels per acre. Last year the yield was about sixty bushels.

FERTILIZERS, FREE LABOR, ETC., IN GEORGIA.

Stewart County, Ga.—The sandy loams, especially the past season, were decidedly unfavorable for wheat, a great deal of the land sown not yielding more than two bushels per acre. Experiments in this county on a small scale, with land liberally fertilized and carefully prepared, have yielded as much as twenty-seven bushels per acre, (sandy loam,) worth \$60 75 gross value. It was believed, however, that an acre of the same land so fertilized would have yielded seven hundred and fifty pounds lint cotton, worth \$187 50, more than twice the value of the wheat crop. A given amount of labor will produce at least fifty per cent. more in value when applied to the production of cotton than when devoted to the raising of any variety of provision crop, (sweet potatoes perhaps excepted.) Yet our planters are rapidly becoming convinced that net progress in wealth is increased by appropriating a sufficient amount of land space and labor to the production of provisions enough for the stock and laborers employed on each plantation. Doubtless that policy will ultimately be adopted.

A gentleman of this county by the name of Hannon, assisted only by his wife, who also attended to her domestic affairs, cultivated forty acres of land, making eleven bales of cotton, eight barrels of sirup, and one hundred and fifty bushels of corn. He employed no freedmen. This is a striking illustration of what white labor can accomplish in this latitude. It illustrates also the low market value of the lands of this country compared with the money value of the crops they produce. Hannon had, at the opening of the year, only a few bushels of corn, one mule, and no money; yet he bought his family supplies on time, which he paid after the sale of his crop. He also bought and paid for the land he cultivated, at \$15 per acre, out of the proceeds of his crop, and had means enough

left to buy as much more. What country can present a parallel to this? In what other country can a man make a net profit sufficient to buy twice as much land as he cultivates?

CORK TREE IN MISSISSIPPI.

Wayne County, Miss.—In the winter of 1859 I received a small tin case of Spanish cork-oak acorns from the Agricultural Department. I planted them, and all came up. One of the trees, now the largest, was planted in a flower garden, in the midst of a group of rose-bushes, and has grown to be about thirteen feet high, and the trunk is eleven inches in diameter. In growth and appearance it is much like the live oak, being an ever-green. The cork around the body is more than an inch thick. My land is poor, consisting of a sandy soil with clay subsoil—in short, the sterile pine land of East Mississippi, sixty miles north of Mobile, Alabama. This will account for the slow growth of my cork oaks. I have no doubt that in the region bordering on the Gulf the cork oak would succeed admirably.

LABOR IN DE SOTO COUNTY, MISS.

De Soto County, Miss.—The good crop and remunerative price of cotton in this county the past year will tend to lessen all other crops and increase the acreage of that great staple the coming year. Our negro laborers have made money, and begin the new year generally upon the same farms, with brighter hopes, and, I think, will do better than ever before. We have not laborers enough, and great efforts are being made to bring immigrants this way. A considerable number of Swedes, Irish, and Englishmen have recently come into this country, while our own people from the Northern and Atlantic States are rapidly coming hither, and our waste places will soon be occupied by intelligent farmers and mechanics.

FERTILIZERS, PEANUTS, ETC., IN MISSISSIPPI.

Clarke County, Miss.—I find but two articles to report on for December, corn and potatoes. Last spring I subsoiled one-seventh of an acre very poor land, planted it in corn, putting one table-spoonful of Pacific guano to each hill. From this I gathered eight bushels of good corn, notwithstanding the very dry and hot weather at the time it was silking and tasseling. I find that the *Arachis*, (peanut,) especially the large red kind, which I have named *Arachis erecta*, is better to raise for stock in this section of the country than corn. The poorest land here will produce fifty bushels to the acre and one ton of haulm, which horses, cows, and sheep are very fond of; in a word, a horse will fatten on it without corn.

LABOR IN LOUISIANA.

St. Tammany Parish, La.—Colored laborers have done well under the contract system. Most farmers pay one-half at the end of each month, the balance at the time the crops are gathered. Colored men who have small farms in charge show a marked improvement in stock.

LABOR IN CARROLL PARISH, LA.

Carroll Parish, La.—Everything and everybody are astir for another cotton and corn crop. Most every one is easy as regards money, mat-

ters, but labor is wanted. If we could get reliable labor we could increase our acreage in cotton and corn at least twenty-five or thirty per cent. the coming season, having everything necessary for so doing, with that important exception.

SUGAR-CANE IN WASHINGTON PARISH, LA.

Washington Parish, La.—Our farmers are turning their attention to sugar-cane, as it pays here better than cotton or any other crop. All the molasses made this year for sale has been sold in the parish.

CROPS IN FAYETTE COUNTY, TEXAS.

Fayette County, Texas.—There is a great lack of diversity of crops in our county. While our climate and soil are adapted to a great many products, cotton absorbs all the attention, and we are fast drifting into the fashion existing before the war of raising cotton and buying everything else. The ramie plant has the past year made a splendid growth, but no one is paying any attention to its cultivation as an article of commerce. The only product besides cotton that is exciting any attention is the tropical sugar-cane, (ribbon,) which it is believed can be successfully cultivated in our county and manufactured with the sorghum machinery; at least, the experiment will be made soon.

SUGAR, COTTON, ETC., IN CAMERON COUNTY, TEXAS.

Cameron County, Texas.—Many farmers are planting increased quantities of sugar-cane. The produce heretofore, for some years back, has been sold in the cane for the Mexicans to eat or chew. Next season we have hopes of making sugar. Cotton has had, during 1869, quite a furor. The product of this section will exceed three hundred bales; in 1868 the crop was about twenty bales; in 1870, from present appearances, there will be at least one thousand bales made. We have no immigration here, and the Mexicans are difficult to start at anything new. Cotton they will plant if they can contract in advance for the delivery of the staple in the seed. There will be a couple of gins put up for next year's crop. Potatoes do well, but not enough raised for the home demand.

THE RAMIE IN TEXAS.

Bexar County, Texas.—The ramie has flourished this season beyond all expectation. We believe the ramie is indigenous with us; a plant is found growing wild in our river bottoms as much like it in shape of leaf, root, stalk, and fiber as two grains of corn or beans are alike. If the two are mixed together no man can distinguish them, not even in preparing the lint.

RESOURCES OF SULLIVAN COUNTY, TENNESSEE.

Sullivan County, Tenn.—This is a good time and place for northern capitalists to invest their money in the different branches of manufactures. A woolen mill for custom work was started in an adjoining county last summer, and the proprietors were surprised at the liberal patronage they received; in fact, they have been unable to do all the work they have been called upon to do. We have any amount of the

best iron ore, which should be made into forks, shovels, axes, and tools generally used by the farmers, without freighting them from other sections: indeed, we have the raw material to make any and all the implements used by the farmers, which we hope will soon be developed and utilized.

COTTON IN MIDDLE TENNESSEE.

Rutherford County, Tenn.—Cotton has now been gathered, and the crop is found to be not more than forty-five hundredths of an average crop. Cotton has been a failure throughout Middle Tennessee the yield being much less than for twenty-five years past. Our winters are becoming more severe, and of longer duration. The springs are later, and the autumn frosts come earlier. Droughts are more severe: all of which is directly attributable to the destruction of our forests. A good cotton season is no longer the rule, but the exception.

LABOR IN GIBSON COUNTY, TENNESSEE.

Gibson County, Tenn.—Labor is very scarce and inefficient. Five thousand more laborers could get employment in this county at fifteen dollars per month.

CROPS OF JEFFERSON COUNTY, WEST VIRGINIA.

Jefferson County, W. Va.—I make the following estimates of the agricultural products of this county for the present year. The aggregate value is above that of 1868. The yield of wheat and corn was larger, but the price is below that of last year.

| Name of product. | Amount. | Number of acres. | Yield per acre. | Average price. | Total value. |
|-------------------------------|---------|------------------|-----------------|----------------|--------------|
| Indian corn.....bushels.. | 297,750 | 19,800 | 15 | \$0 65 | \$193,537 50 |
| Wheat.....do..... | 389,760 | 27,840 | 14 | 1 05 | 409,248 00 |
| Rye.....do..... | 12,003 | 968 | 12.4 | 90 | 10,802 70 |
| Oats.....do..... | 51,999 | 4,466 | 20.6 | 60 | 31,199 40 |
| Buckwheat.....do..... | 709 | 70 | 10 | 85 | 595 00 |
| Beans.....do..... | 72 | 6 | 12 | 2 50 | 180 00 |
| Turnips.....do..... | 500 | 10 | 50 | 65 | 325 00 |
| Potatoes.....do..... | 23,600 | 400 | 59 | 75 | 17,700 00 |
| Potatoes, (sweet).....do..... | 80 | 2 | 40 | 1 50 | 420 00 |
| Sorghum.....gallons.. | 1,603 | 40 | 40 | 1 05 | 1,680 00 |
| Wine.....do..... | 600 | 8 | 75 | 2 10 | 1,260 00 |
| Leaf tobacco.....pounds.. | 1,409 | 7 | 200 | 11 | 154 00 |
| Hay.....tons..... | 9,532 | 6,809 | 1.4 | 14 00 | 133,448 00 |
| Total..... | | 60,426 | | | 800,249 60 |

Tyler County, W. Va.—As a general rule, land is more subject to freezing and thawing between the parallels of latitude of Pittsburg and Cincinnati than north of the former or south of the latter. Hence it is of more importance that the wheat drill be used between those parallels than at the north, where the snow remains longer to protect the tender growth, or farther south where the frosts are not so apt to injure it. But too little is observed and practiced of what experience has taught, that every grain of wheat should be planted at a proper and even depth in all latitudes where it is grown. The drill does this work the best. Flat lands must be drained; most lands must be manured; none too often plowed.

SORGHUM IN MORROW COUNTY, OHIO.

Morrow County, Ohio.—A very small amount of sorghum is raised in this county compared with the crop of a few years ago. The reasons are, poor seed, carelessness in planting and cultivating, and a disgust among farmers for the poor, tarry molasses made for them. A few of us have tried to encourage the cultivation of this product by introducing machinery suitable for manufacturing. D. B. Neal, of this place, has invented a series of pans, defecators, &c., so that a good commercial article can be made with profit. The writer has molasses on hand of his own make that will compare favorably with the best of sirups.

TEXAS CATTLE IN KANSAS.

Cherokee County, Kans.—Immense droves of Texas cattle are arriving in and passing through our county. They have lost eight per cent. of the cattle on wintering them to January 1; cattle arrive poor and thin, unused to cold climate, too wild to nurse, will not eat corn, and cannot endure the severe weather.

STATISTICS OF ADA COUNTY, IDAHO.

Ada County, Idaho.—In referring to the records of the United States Land Office, I find that only 137 homesteads and 428 pre-emption claims have as yet been filed, (ninety per cent. of which are located in this county,) but it may be safely estimated that over 200,000 acres have been inclosed and are under cultivation in this county.

Seven threshing machines have been doing all the threshing in this county during the season, and from the reports of their operations the following figures will show the grain crop of 1869: In Boise Valley, 207,784 bushels; Weaver Valley, 15,000 bushels; in Payette Valley, 10,000—total, 232,784. This amount can be safely classified as follows: Three-eighths wheat, two-eighths oats, two-eighths barley, and one-eighth rye. In giving the total value of the grain crop for 1869, I quote the average price paid by the mill owners at this place as follows: Wheat, 8,729 bushels, at \$2 25, \$196,411; oats, 58,196 bushels, at 90 cents, \$52,376 40; barley, 58,196 bushels, at \$1 20, \$69,835; rye, 29,098 bushels, at \$1 40, \$40,737 20—total, in coin rates, \$559,359 60.

The estimated yield per acre varies from eighteen to forty bushels, depending a great deal on locations and opportunities for irrigation. Had not the grasshoppers visited the country last season the crops would have been at least one-third larger. In many instances the grain was prematurely harvested, and in some instances it did not get its growth. The soil and climate do not seem favorable for Indian corn, as but little was raised last year, and that which I have examined bears no comparison with the corn raised in the Middle States.

The potato crop averaged one hundred and twenty-five bushels per acre, but as the supply by far exceeds the demand it is not looked upon as worth close attention, and many acres are left in the ground for hogs or feed for other stock, or placed in cellars, or covered up in the fields, without an attempt to estimate the quantity. Mr. Clayton, a farmer on Crane's Gulch near this city, informs me that he planted last season three pounds of Early Rose, which yielded three hundred and twenty-five pounds, and three hundred pounds Goodrich, yielding twelve thousand pounds; also ninety-six sweet-potato plants, which yielded six hundred pounds; he also informs me that he, in person, harvested a row of Good-

rich, seventy feet long, containing fifty-two hills with two eyes planted in each hill, which yielded nine hundred pounds. From this you can see that if potato-raising was made a specialty in this Territory, with a reasonable market, or even cheap freighting facilities, it would be very remunerative.

STOCK IN DEER LODGE COUNTY, MONTANA.

Deer Lodge County, Montana.—This is eminently a grazing and stock-raising county, in proof of which I will give a few facts. First. The beeves now in the shops of this town are *too fat* to be good beef, being almost as much tallow as meat. Second. These beeves were driven in off the range, (or prairie,) and butchered, and never were fed in their lives. Third. Two-year olds weigh net from 600 to 700 pounds; three-year olds weigh net from 850 to 1,000 pounds; four-year olds weigh from 1,000 to 1,200 pounds net, and beef of all sizes does not lose more than 38½ per cent. in dressing.

SORGHUM IN ARIZONA.

Pah-Ute County, Arizona.—Our cane crop is now pretty generally harvested, yielding an average of 175 gallons of molasses to the acre; the best yield being 225 gallons to the acre, grown by R. L. Cutler and E. Twitchel. B. Roberts produced from 14 rods of cane 45 gallons of molasses.

COTTON AS A SURPLUS CROP.

The folly of planting all cotton, and buying all farm supplies, was exhibited on an extensive scale before the war, and has been abundantly exemplified since: 1. It is a precarious dependence; it is carrying an entire stock of very fragile eggs in one basket over exceedingly rugged roads. 2. It involves heavy expenses for transportation and commissions on bulky supplies for men and animals of the farm. 3. It prevents the adoption of any system of rotation and the most economic means of fertilization. It is a folly that in 1866 and 1867 plunged thousands of struggling planters into utter bankruptcy.

The wisdom of the opposite course is well illustrated by the following extract from a letter written by a representative of a very large class, who found themselves at "the surrender" without money or a business, or the means of living—in this case a man with a large family of small children, Calvin C. Jones, of Wetumpka, Alabama:

I will now give you the history of my proceedings from the surrender to the present time. At the surrender I had ninety dollars in hard money. There were ten of us in family, myself, wife, and eight children. I had no provisions, but had two horses and one hundred and sixty acres of poor pine land—plantation gone down. I went to work for what we could eat, as it was too late in the year to try to make a crop. The 1st of January, 1866, I went to work to make a crop. I took my hard money and bought provisions with it, and planted all my land, about fifty acres, in corn and pease. My neighbors wanted to know why I did not plant cotton; they said they could raise cotton enough on one acre to buy as much as would grow on five. I told them that the first thing with me was something to eat and then I would raise some cotton. It proved to be a bad crop year, but I raised corn and pease enough to make my meat and to do me for the year 1867. I then planted about half my land in cotton and the balance in corn and pease. I made five bales of cotton, and corn and pease and meat enough to do me for the year 1868. I then sold my poor land for \$600, in three payments, and bought a plantation on the Coosa River, ten miles above We-

tumpka, for which I promised \$2,000 in two payments. I and my children went to work; myself, and one son big enough to plow, and four small ones not large enough to plow, were my force. We made 400 bushels of corn, and \$1,400 worth of cotton. I had corn, pease and meat to do me for the year 1869. My eldest son quit me and went to work for himself. I had one above eleven years of age and put him to the plow, and we have this year made 11½ bales of cotton, 300 bushels of corn, 300 bushels of oats, 55 bushels of wheat, and some potatoes, and 1,600 pounds of pork. During the last five years I have lost four head of horses; still I have not bonded any cotton. My neighbors that went to making cotton to buy corn and meat with are still at it, and they are just one year behind. They have to sell their cotton before they make it at ten or twelve cents per pound, in order to buy meat and bread, and just as long as men pursue that course they will always be behind. I have not worked any freedmen at all, and I think I came out best, for those who do work them in this neighborhood generally come out losers, with difficulties and lawsuits. During the five years since the surrender I have not used any manures, as my means have been limited. If everybody, both white and black, would go to raising their own corn and meat at home we would be a happy people.

THE MICHIGAN FRUIT REGION.

Henry S. Clubb, publisher of the Grand Haven Herald, a journal published in the fruit region of Michigan, furnishes the following facts:

The "Michigan fruit region," popularly so called, extends the whole length of the east shore of Lake Michigan. The peach belt may be said to vary in width from five to twenty-five miles, and its length is about 225 miles. Taking ten miles as its average width, it comprises an area of 2,250 square miles. Estimating that one-third of this area is high enough for the successful culture of the peach and the grape, there are 750 sections, or 480,000 acres of land, capable of producing these popular fruits for market. Of this tract it is probable that not more than 10,000 acres are yet planted to peaches, and perhaps 2,000 to grapes, and only five per cent. of these are yet in full bearing condition. The same land that will produce peaches and grapes will also produce cherries, plums, pears, and certain kinds of apples, while the low lands interspersing the peach and grape ridges, and the swamp lands, so called, are well adapted to the small fruits, especially the cranberry, strawberry, &c.

The accompanying tables exhibit an approximate statement of the amounts of fruit shipped from ports in this region during the year 1869. The largest amounts named have been obtained from the books of the forwarding merchants and shipping companies as well as from the returns in the custom-house in Grand Haven City. The smaller amounts are estimated, there being no returns or record kept. The amount shipped by railroad and teams, to the interior of the State, and to eastern markets, together with the local consumption, would probably add twenty-five per cent. to these figures. All the places mentioned in the table are shipping points for Chicago, Milwaukee, Racine, Sheboygan, Kenosha, and other lake ports.

Since the invention of what are called "fruit safes," the finest peaches produced at Spring Lake, in the county of Ottawa, have been shipped to Boston, Massachusetts. These safes consist of a series of cases similar to type cases, but large enough for each compartment to hold a peach. These cases are stacked in a ventilated chest, and will travel any distance by rail without injury to the peaches.

With regard to the rise in the value of real estate, this is most remarkable in locations nearest to shipping points, and in the vicinity of harbors. In addition to those points which are on record, in the accompanying table, there are numerous piers and second-rate harbors, where fruit can be, and is, shipped to some extent, and even at these points land which formerly was considered valuable only for ties and wood is now salable at from ten to fifty dollars an acre when all the valuable timber is stripped off, and before it is cleared for cultivation. The increase in the price of real estate has kept an even pace with the confidence which each succeeding year inspires in the success of peach culture.

The location of Grand Haven being central with regard to north and south, perhaps the increase here may be regarded as a fair average of the whole region. It is unquestionably greater at St. Joseph on account of the longer time the business has been in operation there, while the increase north is proportionate with the time it has been discovered practicable to grow peaches at Manistee and Grand Traverse.

Planting peaches and grapes for market commenced in the vicinity of Grand Haven and Spring Lake in 1859-'60. At that time only four or five orchards were commenced. They were planted on land which had been stripped of the pine, and was regarded as of very little value, although in close proximity to the villages of Ferrysburg, Mill Point, (now called Spring Lake,) and Grand Haven City. In its wild state this land

would not then bring more than ten to fifteen dollars per acre. One of these orchards, that of the late George Redfield, containing sixteen acres planted to fruit, together with twenty-five acres of scrubby oak, full of grubs, sold in 1867 for \$10,000 cash. Another, that of the late Rev. William M. Ferry, of Grand Haven, sold in 1868, for \$12,000, and a portion of another, belonging to Colonel William M. Ferry at Ferrysburg, sold this year for \$500 an acre.

The wild lands in the vicinity of these orchards vary in price from \$50 to \$200 an acre, as shown by actual sales. High land near navigable water, along the banks of Grand River, or near the little lakes, is the most esteemed, and, although five or six years ago it would not sell at \$10 an acre, now commands \$50 to \$75, and even \$100 an acre.

There is, however, plenty of land equally good for producing peaches, two or three miles from navigation, which can be bought at from five to ten dollars per acre, and it is rapidly settling up. This land, prior to the fruit period, and even two or three years ago could not be sold at any price, and was considered burdensome on account of taxes.

The character of the people who are removing to this region to engage in fruit culture is good—mostly men over forty years of age removing from the interior of the State, or from Wisconsin, Illinois, Indiana, Ohio, New York, New Jersey, Vermont, Massachusetts, England, and Germany. They are people of more than ordinary intelligence, seeking occupation congenial with a refined and cultivated taste.

The annexed table presents an estimate of the principal fruit products shipped from ports of this region in 1869:

| Shipping ports. | Apples, bushels. | Peaches, baskets. | Pears, baskets. | Plums, baskets. | Cherries, baskets. | Quinces, baskets. | Grapes, pounds. | Blackberries, quarts. | Raspberries, quarts. | Strawberries, quarts. |
|---------------------|------------------|-------------------|-----------------|-----------------|--------------------|-------------------|-----------------|-----------------------|----------------------|-----------------------|
| St. Joseph | 34,503 | 687,126 | 3,000 | 400 | 600 | 300 | 27,000 | 744,024 | 340,512 | 103,872 |
| South Haven..... | 5,307 | 19,271 | ..... | ..... | ..... | ..... | 14,000 | ..... | ..... | ..... |
| Sauzatuuck | 34,000 | 24,000 | 400 | ..... | ..... | ..... | ..... | ..... | 44,000 | ..... |
| Holland | 1,011 | 7,914 | ..... | ..... | ..... | ..... | ..... | 45,000 | ..... | 1,500 |
| Grand Haven | 62,400 | 6,819 | 209 | 70 | 17 | ..... | 18,000 | ..... | 23,000 | 16,000 |
| Muskegon | 750 | 1,500 | 50 | 20 | 13 | 122 | 5,000 | 550,000 | 1,400 | 1,200 |
| White River..... | 400 | 500 | 15 | ..... | ..... | 24 | 1,400 | 2,000 | 7,000 | 1,400 |
| Ludington | 200 | 300 | 10 | ..... | ..... | ..... | 500 | 600 | 500 | 500 |
| Pentwater | 300 | 500 | 15 | ..... | ..... | ..... | 700 | 700 | 500 | 400 |
| Manistee | 1,000 | 1,600 | 18 | ..... | ..... | ..... | 2,000 | 1,800 | 1,400 | 1,600 |
| Northport | 250 | 706 | 12 | ..... | ..... | ..... | 600 | 700 | ..... | 500 |
| Grand Traverse..... | 1,600 | 1,400 | 25 | ..... | ..... | ..... | 1,900 | 1,500 | 1,700 | 400 |
| Totals | 141,740 | 751,630 | 3,754 | 490 | 630 | 446 | 71,100 | 1,346,324 | 421,812 | 127,372 |

The values of shipments are given as follows: Apples, at 80 cents per bushel, \$113,392; peaches, at 25 cents per basket, \$638,885 50; pears, at \$1 per basket, \$3,754; plums, at \$1 per basket, \$490; cherries, at \$1 per basket, \$630; quinces, at \$1 per basket, \$446; grapes, at 10 cents per pound, \$7,110; blackberries, at 10 cents per quart, \$134,632 40; raspberries, at 12 cents per quart, \$50,617 44; strawberries, at 10 cents per quart, \$12,737 20; 370 bushels cranberries, at \$1 per bushel, \$1,480; 146 baskets tomatoes, at 75 cents, \$110 50; 660 barrels cider, at \$4, \$2,640—total, \$966,925 04.

TEA CULTURE IN CALIFORNIA.

Herr Schnell, the manager of the experimental farm in El Dorado County, California, where the Japanese colonists are engaging in tea culture and the raising of other products hitherto peculiar to their own country, expresses himself as convinced that as good tea can be produced in California as is grown in China or Japan. He claims that there is but one species of tea known, the *Thea Sinensis*. Those plants described by botanists under the names *T. Bokea*, *T. Viridis*, *T. Stricta*, &c., being only varieties of the *T. Sinensis*, produced by different modes of cultivation and geographical distribution. Dr. Von

Siebold places the *Sinensis* under the *Monadelphica polyandria*, and to the natural family of the *Camelliaceae*. The tea shrub in Japan is an evergreen, from four to six feet high, with a straight stem and numerous irregular branches. Growing wild, the shrub will reach a height of fifteen to twenty feet. The stem is of a bright gray color, the branches chestnut, and the wood hard, with a peculiar odor. On the young branches are the short, soft, green, small leaves, arranged in intervals, of an elliptical shape, with teeth on the borders, resembling closely the leaves of the wild rose. The color is a bright green, of different shades, deepening as the season advances. Between the leaves sprout the blossoms, which are at first of a rose color, but in the course of their development assume lighter shades, and finally, when full blown, are of the color of the ordinary tea rose. When these flowers fade away they leave a small fruit, which contains the seeds. Owing to the great quantity of oil contained in these seeds their preservation is difficult. All the new plants at Mr. Schnell's plantation are raised from seeds, which are planted in rows from four to six inches deep, in a manner similar to that in which beans are usually planted; but it is probable that out of the seeds planted in each hill, not more than one or two will sprout, owing to the decay produced by the excessive quantity of oil they contain. The proper time for planting is stated to be in November or December, when the sprout will appear in about thirty days. By the ensuing May the plant reaches a height of about fourteen inches, when the perfect and tender leaves are stripped off and placed under immediate manipulation. They are first put in a large copper pan and roasted, then placed in baskets and shaken and swung in the wind until they are dried of the moisture that has been exuded by the heat, then roasted again, then rolled in the palms of the hand to separate the leaves and prevent their crumbling into powder; then dried again in the baskets by shaking and swinging, and then put in jars, when they are ready for market. The black teas are roasted three times, the green teas but once or twice. Every year the trees or shrubs are trimmed down to a height of about three feet; after having passed that height, and when properly taken care of, they will produce good crops for upward of thirty years. It is necessary that the plant should have the morning sun and be on the south side of a hill, or the leaves will become yellow and the tea be inferior. Mr. Schnell has about one hundred and twenty acres of good agricultural land ready for planting, and about four hundred acres of rough land, which he proposes to clear as soon as it can be brought into requisition. The only question as to the success of tea culture in California is, whether labor can be obtained at sufficiently low rates to render the business profitable.

THE MENHADEN FISHERIES OF LONG ISLAND.

Menhaden is the name of a peculiar species of fish that come in vast shoals in the spring of the year into the bays at the east end of Long Island for the purpose of spawning. At that stage, however, they are generally in poor condition, and yield but little oil. The fish is not for eating, and the business of catching is to render the menhaden into oil and manure. From estimates furnished by the principal fishermen engaged in the menhaden fishery, the number taken during the past season is put down at 67,500,000. In addition the shore seines and pounds took 5,500,000, of which more than one-half were sold to farmers to be applied to the land for manure, while the remainder were taken to factories to

be transmuted into oil. The business of extracting oil from the menhaden was commenced with the establishment of one factory about twenty years ago. During the past season there have been seventeen factories in operation for a greater or less time on the shores of the Peconic and Gardiner's Bay. The capital invested in these factories, with the boats, nets, &c., is about half a million of dollars. Similar factories have been established in Maine, Rhode Island, Connecticut, New Jersey, and Virginia, so that the total amount invested in the business approximates a million of dollars. Last season there were over thirty gangs of men, three boats to a gang, out in Peconic Bay, one of which made a catch of 3,000,000 fish; the smallest catch was 500,000; the average, 2,500,000. For a period of seven months over one hundred vessels and upward of three hundred men were employed in the bays. The oil extracted from the fish is used for various purposes of dressing leather, in rope-walks, in painting, mixing with other oils, &c. The scrap is used as manure. Last season the produce was 7,105 tons of manure, and 11,460 barrels of oil.

MINERAL FOOD OF PLANTS.

Profitable feeding of animals requires minute attention to quantity and variety of food, proportioned to the varying requirements of the different species, ages, and conditions; and the economical growth of plants demands in equal degree a knowledge of kinds and proportions of plant food. A lack of this knowledge may cause the farmer to store up expensive manures, which may remain unappropriated for years, while the soil is too poor in other elements to yield a good return in the crop cultivated upon it. The grasses, which deteriorate the soil less rapidly than some other crops, will soon despoil the best of soils if their product, hay, is regularly carried away, and no compensating fertilizers are returned. The rate of exhaustion is indicated by the following table, prepared by Cuthbert W. Johnson, F. R. S., showing the proportion of certain mineral constituents existing in the grasses named:

| Grasses. | Water. | Ash. | Phos. acid. | Lime. | Mag-nesia. | Potash. |
|-----------------------------------|--------|-------|-------------|-------|------------|---------|
| NATURAL. | | | | | | |
| Meadow fox-tail grass..... | 80.20 | 1.53 | 6.25 | 3.90 | 1.28 | 37.03 |
| Sweet-scented vernal grass..... | 83.35 | 1.24 | 10.09 | 9.21 | 2.53 | 32.03 |
| Downy oat grass..... | 61.50 | 2.01 | 10.82 | 4.72 | 3.17 | 31.21 |
| Upright brome..... | 59.57 | 2.11 | 7.53 | 10.38 | 4.99 | 20.83 |
| Soft brome..... | 76.62 | 1.36 | 9.62 | 6.64 | 2.60 | 30.09 |
| Crested dog's tail..... | 62.73 | 2.38 | 7.24 | 10.16 | 2.43 | 24.99 |
| Cock's foot..... | 70.00 | 1.59 | 8.60 | 5.82 | 2.22 | 29.52 |
| Seeds ripe..... | 52.57 | 2.61 | 6.41 | 8.14 | 3.47 | 33.06 |
| Hard fescue..... | 69.33 | 1.66 | 12.07 | 10.31 | 2.83 | 31.84 |
| Meadow soft..... | 69.70 | 1.93 | 8.02 | 8.31 | 3.41 | 34.83 |
| Perennial rye grass..... | 58.85 | 2.51 | 8.73 | 9.64 | 2.85 | 46.72 |
| Annual meadow..... | 71.43 | .59 | 9.11 | 11.69 | 2.44 | 41.86 |
| Smooth-stalked meadow grass..... | 79.14 | 1.65 | 10.02 | 5.60 | 2.71 | 31.17 |
| Rough-stalked meadow..... | 67.14 | 2.20 | 9.13 | 8.80 | 3.22 | 29.40 |
| Common cat's tail or timothy..... | 73.60 | 2.26 | 11.29 | 14.94 | 5.30 | 24.25 |
| Annual rye grass..... | 57.21 | 1.99 | 10.07 | 6.82 | 2.59 | 28.99 |
| ARTIFICIAL. | | | | | | |
| Common red clover..... | 66.00 | 1.85 | 6.71 | 22.62 | 4.08 | 36.45 |
| Purple trefoil..... | 81.01 | 1.58 | 8.46 | 26.61 | 10.22 | 22.12 |
| Cow grass..... | 81.05 | 1.77 | 5.41 | 24.56 | 4.52 | 34.72 |
| Common vetch..... | 77.57 | 1.11 | 10.59 | 20.78 | 5.31 | 32.82 |
| Alsike clover..... | 82.90 | 2.12 | 5.64 | 26.83 | 4.01 | 29.72 |
| Bibwort..... | 69.25 | 1.32 | 7.08 | 19.01 | 3.51 | 33.26 |
| Salad burnet..... | 84.75 | 1.15 | 7.81 | 24.82 | 4.21 | 30.26 |
| Yarrow..... | 85.56 | ..... | 7.13 | 13.40 | 3.01 | 30.37 |
| Lucerne..... | 69.95 | 3.04 | 5.96 | 45.95 | 3.60 | 9.99 |

Perhaps the most important mineral element removed by farm crops is phosphate of lime, or the earthy salt of bones, composed of phosphoric acid, 55 parts, and lime, 45 parts. The proportion in which phosphoric acid exists in 10,000 pounds of the following products has been determined by Mr. Sprengel, a celebrated German chemist, as follows :

1. *Seeds not consumed on the land.*

| | Pounds. |
|--|---------|
| 10,000 pounds of the seeds of wheat contain of phosphoric acid..... | 400 |
| 10,000 pounds of the seeds of barley contain of phosphoric acid..... | 210 |
| 10,000 pounds of the seeds of oats contain of phosphoric acid..... | 70 |
| 10,000 pounds of the seeds of beans contain of phosphoric acid..... | 292 |
| 10,000 pounds of the seeds of peas contain of phosphoric acid..... | 190 |

2. *The straw and roots chiefly consumed on the land, and whose solid constituents are returned to the soil.*

| | Pounds. |
|--|---------|
| 10,000 pounds of the straw of wheat contain of phosphoric acid..... | 170 |
| 10,000 pounds of the straw of barley contain of phosphoric acid..... | 160 |
| 10,000 pounds of the straw of oats contain of phosphoric acid..... | 12 |
| 10,000 pounds of the straw of beans contain of phosphoric acid..... | 236 |
| 10,000 pounds of the straw of peas contain of phosphoric acid..... | 240 |
| 10,000 pounds of the red clover contain of phosphoric acid..... | 138 |
| 10,000 pounds of the sainfoin contain of phosphoric acid..... | 220 |
| 10,000 pounds of the cabbages contain of phosphoric acid..... | 436 |
| 10,000 pounds of the common turnips contain of phosphoric acid..... | 73 |
| 10,000 pounds of the Swede turnips contain of phosphoric acid..... | 408 |
| 10,000 pounds of the carrots contain of phosphoric acid..... | 395 |

The following is an approved estimate of the quantity of this acid carried away by live stock from a farm of one hundred acres :

| | Acid. | Bones. |
|--|-------|--------|
| In the bones and flesh of 110 lambs, of 25 pounds each, at 6 weeks old..... | 145 | 537 |
| In 40 year-old sheep of 90 pounds each..... | 210 | 777 |
| In 4 calves, at 5 weeks old, weighing together 500 pounds..... | 21 | 77 |
| In 4 young cows, forming 135 pounds of flesh and 35 pounds of bone each, per annum.. | 16 | 23 |
| In 2 young horses, gaining the same as the last..... | 21 | 77 |

Lime is also dissolved by rains and carried deeper into the earth, or into drains or streams, as analysis of such waters often show. As might be expected, lime proves a valuable ameliorator of such lands.

The loss of lime by cultivation is thus given by Professor J. F. Johnston, as to the crops mentioned :

| | Pounds. |
|---|---------|
| 25 bushels of wheat remove from the soil, of lime..... | 9 |
| 50 bushels of oats remove from the soil, of lime..... | 9 |
| 38 bushels of barley remove from the soil, of lime..... | 15 |
| 2 tons of rye grass remove from the soil, of lime..... | 33 |
| 2 tons of red clover remove from the soil, of lime..... | 126 |
| 25 tons of turnips remove from the soil, of lime..... | 140 |
| 9 tons of potatoes remove from the soil, of lime..... | 270 |

BEET-SUGAR MANUFACTURE IN THE GERMAN ZOLLVEREIN.

H. Kriesmann, United States consul at Berlin, communicates the following interesting facts in reference to the beet-sugar manufacture in the German Zollverein:

In view of the attempts that are being made to introduce the planting of the sugar beet, and the manufacture of beet sugar in our own country, it may not be without interest for the government to be informed what an important source of revenue they form in the German Zollverein.

During the year from September 1, 1868, to August 31, 1869, the revenue collected on beet sugar in the states of the Zollverein amounted to the sum of 12,488,328 thalers, or 9.79 groschens per head of the entire population—a groschen being two and a half cents in gold. This is 2,339,983 thalers, or 23.1 per cent. more than the amount collected in 1867-'68. This very considerable increase is owing in part to the abundant crop of beets in 1868, both as regards quantity and quality; but in part also to the extension of the Zollverein over the states of Schleswig-Holstein and Mecklenburg. The quantity of beets on which taxes were paid in 1868-'69 amounted to 41,953,656 centners. It requires on an average about twelve and a half centners of beets to produce one hundred-weight of raw sugar. Taking this rate for a basis there were manufactured during the period in question 3,966,292 centners of beet sugar, while in the preceding year, 1867-'68, only 3,247,471 centners were manufactured; an increase for 1868-'69 of 748,821 centners.

Of the whole amount of revenue collected from beet sugar in the Zollverein, 11,881,713 thalers were raised in the states of the North German Confederation, to wit: In Prussia, 10,700,950 thalers, or 85.69 per cent.; in Saxony, 15,783 thalers, or 0.13 per cent.; in the Thuringian Principalities, 49,152 thalers, or 0.39 per cent.; in Brunswick, 1,115,828 thalers, or 8.93 per cent. The amounts raised in the Southern German States were as follows: In Bavaria, 94,937 thalers, or 0.76 per cent.; in Württemberg, 284,494 thalers, or 2.28 per cent.; and in Baden, 227,184 thalers, or 1.82 per cent.

After deducting 940,965 thalers on drawbacks for the sugar exports from the Zollverein, and 354,411 thalers for the expense incurred in inspecting and supervising the beet-sugar factories, the net proceeds from the tax on beet sugar amount to 11,192,952 thalers, or 8.77 groschens per head of the population. The amount collected was divided among the States belonging to the Zollverein as follows: The North German Confederation received as its quota 8,618,872 thalers, or 77 per cent.; Luxemburg, 58,438 thalers, or 0.52 per cent.; Bavaria, 1,411,822 thalers, or 12.60 per cent.; Württemberg, 519,747 thalers, or 4.64 per cent.; Baden, 418,957 thalers, or 3.75 per cent.; and Hesse-Darmstadt 165,116 thalers, or 1.48 per cent.

The drawbacks for the sugar exports, as before stated, amounted for 1868-'69 to 940,965 thalers, as against 398,279 thalers for 1867-'68. The former sum representing 328,244 centners, and the latter 138,935 centners of raw-beet sugar, which shows an increase in 1868-'69 of 189,309 centners, or 1.36 per cent. Of the whole sugar manufacture, 83,668,048 centners were consumed within the Zollverein, making 9.58 pounds of beet sugar consumed per head of the entire population.

With such results as these, would it not be in the interest of our own people and government to stimulate and encourage the planting of sugar beet and the manufacture of beet sugar throughout the Union?

FARM CAPITAL.

In an address made at a meeting of the Framlingham Farmers' Club, near the close of 1869, Mr. Mechi, alluding to the great changes brought about through the facilities afforded by science, said that it was too much the custom to dwell on the advance which agriculture has made, rather than the actual defects of its present practice. He thought that attention was imperatively demanded toward increasing the food and employment of the people by a profitable and enlarged investment of capital. He considers most farms too large by more than one-half for the working capital employed, but does not object to large farms if the working capital is sufficient, say £20 per acre.

As an instance of what should be accomplished with proper means, Mr. Mechi cites his own "small" farm of one hundred and seventy acres—all arable land with the exception of fourteen acres of permanent pasture. He purchased his land in comparatively poor condition, in 1841, at a cost of £23 per acre. He invested nearly the same amount

in drainage, roads, buildings, clearances, and machinery. So that in his exhibit as tenant-farmer, he charges himself with an annual rent of £2 per acre. His capital as tenant, December 31, 1868, averaged per acre, is stated thus: Live stock, £6 10s.; farm-houses, £1 1s.; tillage, manure, &c., £3 15s. 6d.; implements and machinery, £2 10s.; hay, corn, &c., unsold, £2 5s. Total per acre, £16 1s. 6d. The items for live stock and tillage may seem large, but the considerable amount invested in live stock, fed mostly on purchased food, is the key to his large and frequent crops and net profit: the large item of tillage, &c., arising from very deep cultivation, and much larger applications of rich oil-cake and corn manure than are generally administered. These methods of outlay account for his production of forty tons of mangold per acre in 1869, and for his frequent production of forty-eight to sixty-four bushels of wheat. Although the season of 1869 was not a good one, his best two fields of white wheat produced forty-eight bushels per acre.

His statement shows a capital of about £7,800 invested in the farm, for which he charges a landlord's rental of £2 per acre, or nearly four and a half per cent. He employs also a tenant's capital of £2,720, from which he obtains a profit of more than £260, or nearly ten per cent. In a series of years this profit ranges from eight to fifteen per cent.

But as more outlay for live stock and purchased food is needed to maintain naturally poor soils in the desired condition of fertility than is required on richer lands, his experience has convinced him that on such land as his own, he could do much better with a capital of £20 to £25 per acre than with £16 per acre. Many farmers in Norfolk and Lincolnshire employ a capital of £20 to £30 per acre advantageously.

In respect to the preparation of the soil, Mr. Mechi continues:

To farm to the greatest advantage, the soil and subsoil, to the depth of three feet, should be well manured; now we only manure the top five or six inches. Our root and green crops can never be over-manured, for they feed in the deep subsoil, when in a fit condition. Market gardeners understand this well; and around the metropolis they easily grow seventy tons of mangolds per acre, and other crops in proportion.

These are his views upon the economical restoration of land:

Poor land may be almost immediately made fertile by heavily folding with sheep, consuming £10 or £15 worth per acre of oil-cake, corn, hay, roots, &c., not the produce of the land upon which the sheep are placed; supposing that there should be a loss even of £3 to £5 per acre, great will be the after gain. This system requires capital; but where there is capital it is far cheaper than guano or other artificials. Where my forty tons of mangolds per acre grew this year, the land was autumn-manured with shed manure, at the rate of £20 worth of oil-cake, &c., consumed for every acre manured, and some guano in addition. This is what I call capital farming, as well as farming with capital. It is the true way to make land pay.

On the 45,000,000 acres, round numbers, available for cultivation in the kingdom, Mr. Mechi estimates the land-owner's capital to average £33 per acre, with an annual rent of 25s.; while the tenant-farmer's capital can hardly reach an average of £5 per acre, calculated on this entire available area. The gross salable yearly product he estimates to average, on a liberal calculation, less than £4 per acre, being a total agricultural product of £182,000,000 to a population of 32,000,000, or less than £6 per individual inhabitant.

He regards it as a disgrace to Great Britain, that, while 80,000,000 of bushels of foreign wheat are required annually, about one-half, or 22,000,000 acres, of the available acreage remains in primitive pasture, producing a minimum of food, and employing a minimum of labor probably not more than 40s. to 50s. worth of food per acre, while their latent capacity is indicated by the fact that on his own naturally poor soil he has frequently realized £15 to £26 per acre in grain and straw.

GRAPE TESTS.

The following is a summary of a test of the saccharine quality of grapes grown in Vine Valley, Yates County, New York, made by a committee of the Vine Valley Grape Growers' Association, Oechsle's must scale being the instrument used :

ISABELLA.

| | |
|---|----|
| A. A. Smith, Vine Valley, picked October 15..... | 80 |
| Green & Mosher, Vine Valley, picked October 20..... | 82 |
| Ganundawah Grape Company, Vine Valley, picked October 25..... | 84 |
| Nichols, Seelye & Co., Vine Valley, picked October 10..... | 85 |
| A. Bassett, Vine Valley, picked October 23..... | 81 |

CATAWBA.

| | |
|---|----|
| Green & Mosher, Vine Valley, picked October 14..... | 87 |
| Vine Valley Grape Company, Vine Valley, picked October 7..... | 87 |
| Perry Brothers, Vine Valley, picked October 20..... | 90 |

CONCORD.

| | |
|--|-----|
| A. A. Smith, Vine Valley, picked October 1..... | 80 |
| Nichols, Seelye & Co., Vine Valley, picked September 25..... | *85 |

DIANA.

| | |
|--|----|
| A. A. Smith, Vine Valley, picked October 23..... | 89 |
| Nichols, Seelye & Co., Vine Valley, picked October 18..... | 90 |

DELAWARE.

| | |
|--|-----|
| A. A. Smith, Vine Valley, picked October 1..... | 105 |
| Perry Brothers, Vine Valley, picked October 25..... | 105 |
| Nichols, Seelye & Co., Vine Valley, picked September 25..... | 107 |

IONA.

| | |
|---|----|
| Perry Brothers, (tested at New York State grape fair,) October 6..... | 97 |
|---|----|

In each case two pounds of the fruit was used, and after being thoroughly mashed and pressed, the must was strained. In every instance, the highest figure was reached by grapes grown at the highest altitude.

LIVE STOCK RECEIPTS AT NEW YORK.

The receipts of live stock at New York for the year 1869 were as follows, compared with those for the preceding year :

| | 1869. | 1868. |
|----------------------|-----------|-----------|
| Beeves..... | 335,761 | 293,101 |
| Milch cows..... | 4,836 | 5,382 |
| Veal calves..... | 93,984 | 82,935 |
| Sheep and lambs..... | 1,479,563 | 1,400,623 |
| Swine..... | 901,308 | 976,511 |
| Total..... | 2,805,452 | 2,758,552 |

*Tested at the New York State Fair at Canandaigua, October 6.

Average price of beeves for the year, $14\frac{3}{5}$ cents per pound, being about one cent per pound lower than the average of 1868. The sources of supply were as follows:

| | |
|--------------------|---------|
| Illinois..... | 198,433 |
| Ohio..... | 29,792 |
| Texas..... | 23,178 |
| Kentucky..... | 22,887 |
| New York..... | 19,170 |
| Indiana..... | 11,077 |
| Missouri..... | 10,596 |
| Michigan..... | 2,281 |
| Iowa..... | 2,061 |
| Canada..... | 1,741 |
| Pennsylvania..... | 1,351 |
| Connecticut..... | 1,090 |
| West Virginia..... | 935 |
| New Jersey..... | 869 |
| Florida..... | 275 |
| Massachusetts..... | 52 |
| Tennessee..... | 18 |
| Nebraska..... | 15 |

LIVE STOCK AT CHICAGO.

George T. Williams, assistant secretary, supplies the following report of receipts and shipments of live stock at the Union stock-yards, Chicago, Illinois, for the year ending December 31, 1869:

| Source of supply. | Cattle. | Hogs. | Sheep. | Horses. |
|---|---------|-----------|---------|---------|
| RECEIPTS. | | | | |
| Chicago, Rock Island and Pacific railroad..... | 58,669 | 237,113 | 21,531 | 63 |
| Illinois Central railroad..... | 75,018 | 378,963 | 102,703 | 366 |
| Chicago, Burlington and Quincy railroad..... | 119,876 | 511,073 | 76,689 | 261 |
| Chicago and Northwestern railroad..... | 64,388 | 269,235 | 52,983 | 171 |
| Chicago and Alton railroad..... | 75,644 | 205,725 | 50,999 | 126 |
| Pittsburg, Fort Wayne and Chicago railroad..... | 666 | 5,692 | 2,850 | 206 |
| Michigan Central railroad..... | 2,599 | 18,723 | 7,502 | 104 |
| Michigan Southern railroad..... | 1,879 | 27,269 | 18,438 | 214 |
| Pittsburg, Cincinnati and St. Louis railroad..... | 1,891 | 7,256 | 5,044 | 11 |
| Driven into yard..... | 2,472 | 820 | 1,333 | 2 |
| Total..... | 403,102 | 1,661,669 | 340,072 | 1,524 |
| Total in 1868..... | 324,524 | 1,706,782 | 270,875 | 1,626 |
| SHIPMENTS. | | | | |
| Pittsburg, Fort Wayne and Chicago railroad..... | 124,882 | 410,177 | 29,515 | 151 |
| Michigan Central railroad..... | 70,971 | 125,489 | 47,220 | 65 |
| Michigan Southern railroad..... | 66,935 | 539,809 | 25,798 | 169 |
| Pittsburg, Cincinnati and St. Louis railroad..... | 13,964 | 2,561 | 1,375 | 35 |
| Chicago, Rock Island and Pacific railroad..... | 5,421 | 974 | 942 | 110 |
| Illinois Central railroad..... | 3,986 | 2,728 | 270 | 90 |
| Chicago, Burlington and Quincy railroad..... | 2,791 | 596 | 565 | 47 |
| Chicago and Northwestern railroad..... | 3,608 | 3,153 | 2,718 | 842 |
| Chicago and Alton railroad..... | 2,159 | 818 | 287 | 29 |
| Total..... | 294,717 | 1,086,365 | 108,690 | 1,538 |
| Total in 1868..... | 215,987 | 1,020,329 | 81,773 | 1,837 |

THE PRICES OF DOMESTIC WOOLS DURING THE PAST FIFTEEN YEARS.

[From Walter Brown & Son's Circular, January 1, 1870.]

| | 1855. | 1856. | 1857. | 1858. | 1859. | 1860. | 1861. | 1862. | 1863. | 1864. | 1865. | 1866. | 1867. | 1868. | 1869. |
|-------------|----------|----------|----------|----------|----------|----------|-----------|----------|-----------|-----------|-----------|----------|----------|----------|----------|
| January: | | | | | | | | | | | | | | | |
| Fleece..... | 25 to 45 | 31 to 45 | 34 to 65 | 31 to 45 | 22 to 72 | 40 to 62 | 35 to 51 | 48 to 55 | 28 to 75 | 73 to 75 | 85 to 107 | 45 to 68 | 49 to 70 | 35 to 65 | 45 to 70 |
| Pulled..... | 22 to 42 | 30 to 39 | 32 to 55 | 29 to 33 | 34 to 50 | 32 to 50 | 28 to 50 | 43 to 50 | 37 to 72 | 65 to 85 | 75 to 110 | 35 to 75 | 32 to 55 | 24 to 45 | 28 to 50 |
| February: | | | | | | | | | | | | | | | |
| Fleece..... | 24 to 42 | 31 to 47 | 42 to 67 | 36 to 42 | 48 to 75 | 40 to 62 | 35 to 52 | 43 to 55 | 70 to 95 | 70 to 95 | 85 to 108 | 45 to 72 | 42 to 75 | 36 to 65 | 45 to 70 |
| Pulled..... | 21 to 36 | 34 to 40 | 33 to 43 | 25 to 32 | 35 to 67 | 35 to 54 | 28 to 48 | 37 to 50 | 70 to 90 | 62 to 78 | 70 to 97 | 35 to 75 | 37 to 55 | 25 to 48 | 29 to 52 |
| March: | | | | | | | | | | | | | | | |
| Fleece..... | 24 to 42 | 35 to 56 | 42 to 67 | 33 to 40 | 48 to 75 | 37 to 62 | 35 to 52 | 43 to 55 | 80 to 105 | 68 to 85 | 60 to 90 | 45 to 80 | 41 to 75 | 38 to 65 | 45 to 70 |
| Pulled..... | 21 to 36 | 30 to 43 | 33 to 62 | 18 to 33 | 35 to 58 | 30 to 52 | 28 to 48 | 37 to 50 | 70 to 95 | 60 to 78 | 59 to 75 | 32 to 65 | 41 to 55 | 25 to 48 | 29 to 52 |
| April: | | | | | | | | | | | | | | | |
| Fleece..... | 25 to 45 | 35 to 55 | 42 to 67 | 29 to 42 | 45 to 67 | 36 to 60 | 35 to 48 | 42 to 56 | 70 to 95 | 70 to 87 | 60 to 75 | 44 to 65 | 45 to 77 | 42 to 78 | 45 to 70 |
| Pulled..... | 21 to 36 | 33 to 45 | 33 to 47 | 22 to 36 | 32 to 58 | 39 to 48 | 28 to 48 | 35 to 45 | 85 to 95 | 65 to 78 | 50 to 55 | 45 to 60 | 48 to 50 | 30 to 50 | 36 to 52 |
| May: | | | | | | | | | | | | | | | |
| Fleece..... | 25 to 44 | 35 to 58 | 42 to 60 | 33 to 42 | 40 to 60 | 35 to 60 | 30 to 52 | 42 to 52 | 65 to 90 | 73 to 90 | 50 to 80 | 40 to 62 | 45 to 75 | 43 to 68 | 43 to 70 |
| Pulled..... | 21 to 37 | 35 to 50 | 36 to 50 | 25 to 36 | 32 to 52 | 28 to 46 | 24 to 48 | 35 to 47 | 65 to 90 | 65 to 83 | 50 to 70 | 25 to 57 | 28 to 40 | 33 to 52 | 26 to 50 |
| June: | | | | | | | | | | | | | | | |
| Fleece..... | 26 to 43 | 27 to 40 | 40 to 65 | 37 to 42 | 40 to 60 | 39 to 58 | 37 to 41½ | 43 to 50 | 63½ to 77 | 75 to 105 | 50 to 80 | 42 to 75 | 41 to 75 | 43 to 68 | 42 to 65 |
| Pulled..... | 23 to 37 | 35 to 42 | 33 to 43 | 25 to 36 | 32 to 52 | 25 to 47 | 29 to 38 | 37 to 48 | 63 to 78 | 70 to 93 | 45 to 68 | 27 to 60 | 28 to 40 | 33 to 52 | 26 to 50 |
| July: | | | | | | | | | | | | | | | |
| Fleece..... | 26 to 45 | 30 to 47 | 37 to 60 | 28 to 45 | 36 to 62 | 33 to 58 | 29 to 40 | 35 to 60 | 68 to 75 | 85 to 130 | 50 to 86 | 47 to 80 | 40 to 70 | 40 to 65 | 43 to 65 |
| Pulled..... | 24 to 37 | 12 to 41 | 39 to 45 | 26 to 37 | 30 to 50 | 29 to 47 | 28 to 30 | 25 to 53 | 65 to 78 | 70 to 100 | 45 to 68 | 30 to 65 | 35 to 60 | 27 to 50 | 26 to 50 |
| August: | | | | | | | | | | | | | | | |
| Fleece..... | 26 to 50 | 38 to 52 | 37 to 60 | 30 to 45 | 40 to 60 | 43 to 60 | 22 to 40 | 31 to 62 | 65 to 75 | 90 to 125 | 50 to 80 | 48 to 75 | 40 to 67 | 38 to 65 | 43 to 65 |
| Pulled..... | 24 to 37 | 32 to 42 | 35 to 55 | 22 to 38 | 30 to 50 | 34 to 48 | 22 to 37 | 35 to 55 | 60 to 70 | 75 to 115 | 45 to 70 | 30 to 65 | 28 to 60 | 25 to 48 | 26 to 50 |
| September: | | | | | | | | | | | | | | | |
| Fleece..... | 27 to 47 | 36 to 55 | 43 to 60 | 32 to 45 | 38 to 62 | 40 to 60 | 28 to 40 | 40 to 66 | 70 to 72 | 75 to 110 | 50 to 82 | 48 to 75 | 40 to 67 | 40 to 65 | 43 to 65 |
| Pulled..... | 25 to 40 | 33 to 45 | 35 to 50 | 26 to 40 | 30 to 50 | 36 to 50 | 26 to 40 | 50 to 53 | 55 to 68 | 65 to 105 | 45 to 70 | 30 to 65 | 28 to 58 | 25 to 47 | 26 to 50 |
| October: | | | | | | | | | | | | | | | |
| Fleece..... | 27 to 50 | 37 to 55 | 39 to 65 | 32 to 50 | 40 to 65 | 39 to 60 | 32 to 52 | 55 to 72 | 60 to 85 | 80 to 110 | 50 to 82 | 47 to 75 | 37 to 65 | 42 to 70 | 43 to 65 |
| Pulled..... | 29 to 50 | 30 to 52 | 27 to 46 | 26 to 40 | 30 to 52 | 25 to 55 | 24 to 50 | 50 to 62 | 50½ to 80 | 65 to 104 | 45 to 70 | 30 to 65 | 35 to 57 | 25 to 50 | 24 to 47 |
| November: | | | | | | | | | | | | | | | |
| Fleece..... | 26 to 49 | 42 to 56 | 39 to 57 | 33 to 55 | 40 to 60 | 36 to 65 | 35 to 53 | 59 to 70 | 70 to 83 | 90 to 110 | 50 to 80 | 46 to 70 | 34 to 65 | 45 to 70 | 43 to 65 |
| Pulled..... | 25 to 38 | 37 to 46 | 25 to 32 | 32 to 52 | 39 to 50 | 30 to 55 | 36 to 50 | 56 to 65 | 67 to 80 | 75 to 100 | 40 to 65 | 30 to 65 | 25 to 59 | 30 to 50 | 24 to 47 |
| December: | | | | | | | | | | | | | | | |
| Fleece..... | 31 to 44 | 38 to 62 | 25 to 64 | 10 to 71 | 40 to 62 | 29 to 60 | 46 to 52 | 69 to 69 | 75 to 85 | 90 to 115 | 50 to 67 | 42 to 70 | 34 to 65 | 45 to 72 | 40 to 65 |
| Pulled..... | 31 to 39 | 31 to 47 | 20 to 30 | 33 to 47 | 32 to 52 | 25 to 50 | 28 to 50 | 55 to 70 | 70 to 76 | 75 to 110 | 40 to 65 | 42 to 58 | 24 to 50 | 28 to 50 | 24 to 46 |

The average prices of domestic fleece wool in the United States from 1857 to 1861 was: For fine, 50½¢; for medium, 42½¢; and for coarse, 35½¢. Average prices for four years, from 1861 to 1866, (during the war,) for fleeces, 63¢, to 83¢; for pulled, 56¢, to 64¢. Average prices for the year 1866: Fleeces, 45¢, to 72¢; pulled, 29¢, to 64¢. Average prices for the year 1867: Fleeces, 40¢, to 70¢; pulled, 26¢, to 57¢. Average prices for the year 1868: Fleeces, 40¢, to 67¢; pulled, 27¢, to 49¢. Average prices for the year 1869: Fleeces, 43¢, to 67¢; pulled, 28¢, to 50¢.

EXPORTS OF PETROLEUM.

The New York Commercial List gives the following table of petroleum exports for the last seven years, from the several ports named, and the total exports for the preceding two years :

| From— | 1869. | 1868. | 1867. | 1866. | 1865. | 1864. | 1863. |
|-------------------------------|-------------|------------|------------|------------|------------|------------|------------|
| New York.....galls.. | 65,933,600 | 52,803,202 | 33,834,133 | 34,501,385 | 14,626,020 | 21,335,784 | 19,547,604 |
| Boston.....galls.. | 2,117,939 | 2,410,114 | 2,264,113 | 1,591,694 | 1,511,173 | 1,626,307 | 2,049,431 |
| Philadelphia.....galls.. | 33,445,552 | 40,505,620 | 29,437,429 | 28,811,853 | 12,552,682 | 7,760,148 | 5,395,788 |
| Baltimore.....galls.. | 1,251,423 | 2,587,707 | 1,515,454 | 2,483,419 | 973,117 | 929,971 | 915,806 |
| Portland.....galls.. | ..... | 705,107 | 900 | 12,100 | 11,088 | 70,762 | 342,082 |
| New Bedford.....galls.. | ..... | ..... | ..... | 30,000 | 50,000 | ..... | ..... |
| Cleveland.....galls.. | ..... | 270,000 | ..... | ..... | 81,173 | 80,000 | ..... |
| Total..... | 102,748,604 | 99,281,750 | 67,052,029 | 67,430,451 | 29,805,523 | 31,872,972 | 28,250,721 |
| Equal to barrels of 40 galls. | 2,568,715 | 2,482,044 | 1,676,300 | 1,685,761 | 745,138 | 796,824 | 706,268 |

Total export in 1862, 10,887,701 gallons; 1861, 1,500,000 gallons.

The average prices per gallon for the past six years, are given as follows:

| Years. | Crude in bulk. | Crude in barrels. | Refined, st'd white | Naphtha. |
|-----------|----------------|-------------------|---------------------|----------|
| | Cents. | Cents. | Cents. | Cents. |
| 1869..... | 18.25 | 23.25 | 32.73 | 10.33 |
| 1868..... | 14.40 | 19.68 | 29.52 | 18.91 |
| 1867..... | 12.17 | 17.43 | 28.41 | 23.75 |
| 1866..... | ..... | 25.78 | 42.45 | 37.54 |
| 1865..... | ..... | 38.37 | 52.87 | 50.37 |
| 1864..... | ..... | 41.81 | 65.03 | 39.54 |

FACTS FROM VARIOUS SOURCES.

The editor of the Rocky Mountain News, after a trip among the farmers of the valley of the Cache à la Poudre, reports the wheat crop of about forty producers visited to reach 8,660 bushels; oats and barley, 24,350 bushels; corn, 2,910 bushels; potatoes, 106,090 bushels. The average yield of wheat in the valley is stated to be $22\frac{1}{2}$ bushels per acre, though crops are reported which average as high as $35\frac{1}{2}$ bushels. Careless farming and the grasshoppers reduced the general average. The average yield of oats is $38\frac{1}{2}$ bushels to the acre; the highest yield reported, $58\frac{1}{2}$ bushels. Corn averaged $25\frac{1}{2}$ bushels per acre; and potatoes, 87 bushels. The latter crop is considered a partial failure. The yield of the same farms in 1868 was as follows: Wheat, 5,258 bushels; oats and barley, 25,000 bushels; corn, 2,125 bushels; potatoes, 5,217 bushels. The hay crop of thirty-five parties named reaches 2,465 tons. Of butter, ten farmers report a total of 18,971 pounds. The whole number of acres under cultivation, (not including hay land.) is between 1,500 and 2,000. The above figures do not show the complete crops of the valley, as there were a few farmers which the reporter failed to see.

A Colorado farmer urges more attention to the raising of hogs in that Territory. He says bacon, hams, and shoulders have averaged there more than thirty cents per pound for years, and that grain, at an average of two and one-half cents per pound, as it has been for two years past, can nowhere else find so good a market as in the pig-pen. His experience is in favor of using early spring pigs. He feeds them on milk and offal from the kitchen and garden until they outgrow the supply, when he adds bran and shorts to the milk, letting it sour. His pigs thrive wonderfully on this fare, much better than on corn alone or any other

dry grain. He had many pigs that on December 1 would dress 180 pounds each, while pigs from the same litter, fed on dry grain at a mill, would not dress half as much. For about two weeks before killing, he gives them all the corn they want.

It is stated that smutty wheat can be made into good and wholesome flour by adding one quart of finely pulverized air-slacked lime to each eight bushels of grain, thoroughly mixing it before it passes through the cleaning apparatus of the grist-mill previous to grinding. The lime seems to cut the smut which adheres to the fuzzy end of the wheat, and both are blown out with other dust and dirt.

An Ohio correspondent, writing from Butler County, gives the weight of eleven lots of hogs, in all 537 head, raised within two miles of Monroe. They were of the big China and the Poland blood, and were 22 months old. The average gross weight was 540 pounds each. Ten choice hogs averaged 763 pounds. One lot of 80 averaged 574 pounds each. The ten which averaged 763 pounds ranged from 676 pounds to 935 pounds. It is further stated that a lot of eleven-months pigs, thirty in number, averaged 384 pounds. Another lot of thirty averaged 386 pounds.

Another correspondent, at Woodbury, New Jersey, states that he purchased four pigs, at \$15 each—\$60; paid for corn, \$2; mill feed, \$27 25; hog cheese, (chandlers' scraps,) \$28 36; ground rye and corn, \$17 60; small sweet potatoes, \$9; forty-eight bushels of corn, ground, \$51 20—total expenses, \$195 41. When slaughtered the total weight was 1,963 pounds; average 490 $\frac{3}{4}$ pounds. The 1,963 pounds of pork, at 14 cents per pound, brought \$274 82; for the manure he is offered \$40; total receipts, \$314 82. Net profit on the four hogs, \$119 41. The pigs were penned January 18, 1869, and were never allowed to go out. They were killed December 11, 1869, aged 15 months and 19 days.

The shipments of butter, by freight, from St. Albans, Vermont, during the year 1868, amounted to 2,875,060 pounds; and of cheese, 736,920 pounds. These figures would be considerably increased by the addition of the amount of the same product shipped by express.

The Winona Republican states that the exports of wheat from that city in 1869 were 3,769,450 bushels, against 2,453,086 bushels in 1868; and the exports for the whole State, 10,016,116 bushels, against 6,990,584 bushels in 1868.

The imports of molasses, (exclusive of receipts on Pacific coast,) in 1869, reached 50,016,167 gallons, against 55,502,989 gallons in 1868. The total consumption in the United States of foreign and domestic, including sugar-house sirups, and sorghum and maple molasses, is estimated at from 98,000,000 to 100,000,000 gallons.

The imports of sugar for the year 1869 (exclusive of receipts on the Pacific coast) were 501,354 tons, against 470,975 tons in 1868. The total consumption in the United States during the year is estimated at 574,399 tons, against 543,033 tons in 1868.

There were exported from San Francisco during the year ending December 31, 1869, 427,497 barrels of flour, 5,011,022 centals of wheat, 314,755 centals of barley, and 27,060 centals of oats. Of the flour shipped 152,193 barrels went to China, 64,469 barrels to Australia, 37,236 barrels to Rio Janeiro, 33,370 barrels to Montevideo, 26,751 barrels to Great Britain, and 22,976 to New York. Of the wheat, 4,785,872 centals were sent to Great Britain, and only 136,200 centals to New York.

The receipts of wool in San Francisco for 1869, according to the Commercial Herald, California, were: spring clip, 8,735,484 pounds; California fall clip, 4,469,136 pounds; California pulled wool, 1,698,340 pounds; Oregon and northern coast, 1,104,000 pounds; Sandwich Islands, 23,909 pounds; total, 16,030,869 pounds. The total California product reached

15,409,171 pounds, against 12,920,761 pounds in 1868. The amount shipped to eastern markets was 13,303,531 pounds.

In the nine months ending September 30, 1869, Great Britain paid to the United States for receipts of wheat £4,316,629, against £3,706,955 in the corresponding period of 1868, and £1,469,442 in same period in 1867. The payments made to Russia for the nine months of 1869 amounted to £2,390,085, against £4,828,001 in 1868 and £6,622,639 in 1867; and to Prussia £2,018,485 against, £2,315,614 in 1868 and £2,315,614 in 1867.

The importations of wheat into the United Kingdom during the eleven months ending November 30, 1869, amounted to 32,648,051 hundred-weight, against 30,512,493 hundred-weight for the corresponding period of preceding year. Of this amount 11,086,982 hundred-weight were received from the United States, against 5,513,643 hundred-weight for the same period in 1868; from Russia, 7,761,915 hundred-weight, against 9,397,245 hundred-weight in 1868; from Prussia, 4,264,520 hundred-weight, against 4,004,655 hundred-weight in 1868; from British North America, 2,077,850 hundred-weight, against 437,036 hundred-weight in 1868. It will be noted that the receipts from the United States have increased nearly one hundred per cent.

Official figures from the department of the Prussian minister of agriculture show that in the several provinces of that kingdom the past year the wheat crop has fallen four per cent. below the product of 1868; rye, eight per cent. below; barley, seven per cent.; oats, eleven per cent.; peas, twelve per cent.; and potatoes, fifteen per cent. below the preceding yield. The straw of the several crops is reported as follows: Wheat and rye, one per cent. below the product of 1868; barley, seven per cent. below; oats, twelve per cent. below; peas, six per cent. below; and buckwheat, thirty-seven per cent. below.

A government commission in France is engaged in the investigation of a disease which has for many years caused great ravages among the live stock in some parts of that empire. This disease is peculiar to the departments of the Cantal and Puy de Dôme, in the center of France, and is known by the name of "Mal de Montagne." It infects the cattle fed upon the highlands of the departments, which form a vast volcanic plateau about 3,500 feet above the level of the sea. The southern and western departments are supplied with cattle from these pastures, and almost all the young beasts which are fattened in Normandy are bred here. Large quantities of cheese are also made in these districts. It seems to be established that the malady consists in an affection of the viscera of the animal, caused by the presence in the blood of an undue quantity of carbon; whether produced by the peculiar properties of the flora or water, remains doubtful.

It is stated that of the *Extractum carnis*, or essence of meat, prepared on Baron Liebig's system, at the works of the company at Fray Bentos, Uruguay, the exportation for 1869 amounted to about fifty thousand pounds per month. It is said that the meat of this country is without fat, and is insipid.

A French circular estimates the beet-sugar crop of that country to be from two to two and a half per cent. larger than that of the preceding year, and the total product is estimated to reach 250,000 tons, though other circulars place it lower. A Liverpool circular reports the beet-sugar production of Europe last year at 725,000 tons, against 625,000 tons in 1868. The number of beet-sugar factories in the countries named are stated to be as follows: France, 475; Belgium, 120; Zollverein, 297; Austria, 209; besides thousands of spirit distilleries and alkali works, the results of the sugar-beet industry.

METEOROLOGY.

[COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY THE OBSERVERS OF THE SMITHSONIAN INSTITUTION. NOTES ON THE WEATHER FROM REPORTS RECEIVED UP TO JANUARY 16; TABLES, TO JANUARY 20.]

DECEMBER, 1869.

Table showing the highest and the lowest range of the thermometer, (with dates prefixed,) the mean temperature, and the amount of rain-fall, (including melted snow,) in inches and tenths, for December, 1869, at the stations, and by the observers named. Hours of observation, 7 a. m., and 2 and 9 p. m.

[illegible]

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain and melted snow. |
|-------------------------|--------------------|------------------------------|--------|---------------------------|--------|---------------------------|------------------------|--------------------------|
| MASSACHUSETTS. | | | | | | | | |
| Kingston | Plymouth | G. S. Newcomb | 28 | 53 | 8 | 4 | 32.5 | <i>In.</i> 3.25 |
| Topsfield | Essex | S. A. Merriam | 1 | 49 | 10 | — 3 | 28.0 | 6.66 |
| Lawrence | do | John Fallon | 1 | 51 | 10 | — 6 | 28.2 | 4.21 |
| Newbury | do | John H. Caldwell | 17 | 50 | 10 | 0 | 29.0 | ..... |
| Georgetown | do | S. A. Nelson | 26 | 50 | 10 | 2 | 29.7 | 5.10 |
| Milton | Norfolk | Rev. A. K. Teele | 17 | 62 | 4, 10 | 3 | 34.4 | 4.98 |
| Cambridge | Middlesex | Mrs. J. B. Perry | 1 | 53 | 10 | 4 | 31.5 | ..... |
| North Billerica | do | Rev. E. Nason and son | 12, 27 | 48 | 10 | — 9 | 28.8 | ..... |
| West Newton | do | Jno. H. Bixby | 22 | 54 | 8 | — 4 | 30.6 | ..... |
| Worcester | Worcester | Jos. Draper, M. D. | 1 | 46 | 4, 10 | 7 | 29.7 | 5.25 |
| Mendon | do | Jno. G. Metcalf, M. D. | 22 | 50 | 10 | 0 | 28.1 | 2.60 |
| Lunenburg | do | Geo. A. Cunningham | 22, 27 | 47 | 8 | 5 | 29.1 | 5.15 |
| Amherst | Hampshire | Prof. E. S. Snell | 22, 30 | 43 | 9 | — 8 | 27.5 | 4.96 |
| Richmond | Berkshire | Wm. Bacon | 27 | 47 | 9 | 6 | 26.5 | 4.10 |
| Williams College | do | Prof. A. Hopkins | 22, 26 | 45 | 8 | — 2 | 27.2 | 4.40 |
| Hinsdale | do | Rev. E. Dewhurst | 27 | 50 | 7 | 1 | 25.1 | 2.87 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 29.1 | 4.40 |
| RHODE ISLAND. | | | | | | | | |
| Newport | Newport | W. H. Crandall | 22, 28 | 48 | 9 | 17 | 34.6 | 6.08 |
| CONNECTICUT. | | | | | | | | |
| Columbia | Tolland | Wm. H. Yeomans | 22 | 52 | 9 | 4 | 31.9 | 5.76 |
| Middletown | Middlesex | Prof. Jno. Johnston | 1, 22 | 50 | 10 | — 5 | 29.2 | 5.80 |
| Colebrook | Litchfield | Charlotte Rockwell | 27 | 48 | 10 | 3 | 26.7 | 4.15 |
| Brookfield | Fairfield | Rev. S. W. Roe | 27 | 52 | 8 | 0 | 32.5 | 7.30 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 30.1 | 5.75 |
| NEW YORK. | | | | | | | | |
| Moriches | Suffolk | E. A. Smith & daugh'rs | 11 | 57 | 10 | 7 | 37.1 | 5.39 |
| South Hartford | Washington | G. M. Ingalsbe | 17 | 46 | 8 | — 4 | 27.9 | 4.10 |
| Fort Edward | do | Prof. J. S. Cooley | 17 | 51 | 10 | 4 | 32.1 | ..... |
| Hudson | Columbia | Dr. G. P. Hachenberg | 1 | 50 | 10, 15 | 12 | 31.5 | 5.11 |
| Garrison's | Putnam | Thos. B. Arden | 22 | 53 | 10 | 10 | 32.8 | 4.43 |
| White Plains | West Chester | O. R. Willis | 12 | 48 | 10 | 12 | 32.6 | ..... |
| Deaf and Dumb Ins. | New York | Prof. O. W. Morris | 22 | 55 | 7 | 16 | 34.6 | 5.79 |
| Columbia College | do | Prof. Chas. A. Joy | 28 | 53 | 7 | 14 | 36.0 | 6.50 |
| Rutgers Fem. Col. | do | Mrs. M. M. Marsh | 22 | 60 | 7 | 16 | 36.3 | 4.15 |
| Newburg | Orange | Jas. H. Gardiner | 22 | 49 | 8 | 12 | 32.0 | 3.30 |
| Minaville | Montgomery | J. W. Bussing | 21 | 40 | 7 | 6 | 26.2 | 3.70 |
| Cooperstown | Otsego | G. Pomeroy Keese | 22 | 49 | 7 | — 2 | 27.0 | 3.69 |
| Gouverneur | St. Lawrence | C. H. Russell | 22 | 44 | 7 | — 4 | 26.6 | 2.68 |
| North Hammond | do | C. A. Wooster | 11 | 48 | 7 | — 4 | 23.5 | 4.60 |
| Houseville | Lewis | Walter D. Yale | 27 | 49 | 7 | — 2 | 25.8 | 3.68 |
| Leyden | do | C. C. Merriam | 26 | 42 | 7 | — 4 | 23.8 | 7.70 |
| South Trenton | Oneida | Storrs Barrows | 10 | 41 | 7 | 2 | 27.3 | 4.10 |
| Cazenovia | Madison | Prof. Wm. Soule | 27 | 46 | 6 | 6 | 23.9 | ..... |
| Oneida | do | S. Spooner, M. D. | 22 | 48 | 6, 7 | 12 | 30.0 | 4.82 |
| Depauville | Jefferson | Henry Haas | 26 | 47 | 7 | 1 | 27.5 | 4.38 |
| Oswego | Oswego | Wm. S. Malcolm | 10 | 49 | 7 | 13 | 30.7 | 4.60 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain and melted snow. |
|--------------------------|--------------------|-------------------------------|--------|---------------------------|-------|---------------------------|------------------------|--------------------------|
| NEW YORK—Con'd. | | | | | | | | |
| Palermo | Oswego | E. B. Bartlett | 26 | 45 | 7 | 5 | 27.1 | 3.98 |
| North Volney | do | J. M. Patrick | 26 | 47 | 7 | 8 | 28.9 | ..... |
| Waterburg | Tompkins | D. Trowbridge | 26 | 44 | 3 | 9 | 28.6 | ..... |
| Nichols | Tioga | Rob't Howell | 22 | 48 | 7 | 11 | 30.2 | ..... |
| Newark Valley | do | Rev. Sam'l Johnson | 22 | 48 | 10 | 6 | 28.9 | 3.20 |
| Himrods | Yates | Gilbert D. Baker | 22 | 45 | 7 | 11 | 28.6 | 3.38 |
| Rochester | Monroe | H. W. Matthews | 22 | 49 | 7 | 14 | 32.2 | 2.92 |
| Little Genesee | Allegany | Dan'l Edwards | 16 | 46 | 7 | — 2 | 28.1 | 2.50 |
| Suspension Bridge | Niagara | W. Martin Jones | 22 | 48 | 7 | 14 | 32.0 | ..... |
| Buffalo | Erie | Wm. Ives | 26 | 50 | 7 | 13 | 31.2 | 3.09 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 29.9 | 4.24 |
| NEW JERSEY. | | | | | | | | |
| Paterson | Passaic | Wm. Brooks | 22 | 55 | 10 | 7 | 32.8 | 5.96 |
| Newark | Essex | W. A. Whitehead | 1 | 49 | 10 | 10 | 33.2 | 5.44 |
| Trenton | Mercer | E. R. Cook | 16 | 52 | 10 | 10 | 37.3 | 6.37 |
| Rio Grande | Cape May | Mrs. J. R. Palmer | 31 | 56 | 4 | 15 | 36.6 | 6.13 |
| Moorestown | Burlington | Thos. J. Beans | 22 | 58 | 10 | 7 | 34.2 | 4.54 |
| New Germantown | Hunterton | A. B. Noll | 1 | 57 | 10 | 5 | 31.6 | 4.56 |
| Lesser Cross Roads | Somerset | John Fleming | 22 | 52 | 10 | 6 | 32.7 | ..... |
| Haddonfield | Camden | John Boadle | 28 | 50 | 10 | 6 | 34.7 | 4.81 |
| Newfield | Gloucester | E. D. Couch | 22 | 60 | 10 | 5 | 35.5 | ..... |
| Greenwich | Cumberland | Miss R. C. Sheppard | 16 | 54 | 7 | 14 | 37.2 | 4.21 |
| Vineland | do | John Ingram, M. D. | 22 | 58 | 7 | 8 | 35.9 | 4.88 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 34.7 | 5.21 |
| PENNSYLVANIA. | | | | | | | | |
| Nyces | Pike | John Grathwohl | 11 | 48 | 9 | — 9 | 28.7 | 4.96 |
| Hamlington | Wayne | Jas. D. Stocker | 12 | 47 | 10 | 6 | 30.9 | 3.95 |
| Dyberry | do | Theodore Day | 11 | 48 | 10 | — 2 | 27.6 | 4.50 |
| Fallington | Bucks | Eben'r Hance | 22 | 56 | 10 | 8 | 35.0 | 5.20 |
| Philadelphia | Philadelphia | Prof. J. A. Kirkpatrick | 22 | 56 | 7 | 18 | 37.7 | 4.35 |
| Germantown | do | Thos. Meehan | 22 | 58 | 7 | 11 | 34.2 | ..... |
| Do | do | Ernest Turner | 22 | 56 | 7, 10 | 15 | 34.7 | 9.60 |
| Horsham | Montgomery | Miss Anna Spencer | 22 | 55 | 10 | 8 | 33.6 | 5.45 |
| Plymouth Meeting | do | M. H. Corson | 22 | 55 | 10 | 3 | 34.2 | 5.55 |
| White Hall | Lehigh | Edw'd Kohler | 28 | 49 | 10 | 1 | 32.8 | ..... |
| Factoryville | Wyoming | Rodman Sisson | 22 | 48 | 10 | 3 | 28.7 | 4.82 |
| Reading | Berks | J. Heyl Raser | 22, 28 | 51 | 10 | 11 | 36.3 | 5.44 |
| Parkersville | Chester | F. Darlington, M. D. | 22 | 56 | 10 | 8 | 34.5 | 4.30 |
| West Chester | do | George Martin, M. D. | 22 | 53 | 7 | 10 | 33.9 | 4.98 |
| Ephrata | Lancaster | W. H. Spera | 22 | 50 | 10 | 8 | 35.8 | 5.87 |
| Mount Joy | do | J. R. Hoffer | 31 | 55 | 10 | 10 | 36.9 | ..... |
| Harrisburg | Dauphin | Wm. H. Egle, M. D. | 1 | 56 | 7 | 18 | 37.2 | 6.98 |
| Carlisle | Cumberland | Wm. H. Cook, M. D. | 31 | 51 | 10 | 12 | 34.2 | 8.10 |
| Fountain Dale | Adams | S. C. Walker | 16, 31 | 47 | 7 | 18 | 33.0 | 8.53 |
| Tioga | Tioga | E. T. Bentley | 12, 22 | 46 | 7 | — 2 | 29.7 | 4.20 |
| Lewisburg | Union | Prof. C. S. James | 16 | 44 | 10 | 4 | 29.7 | 3.25 |
| Grampian Hills | Clearfield | Elisha Fenton | 11 | 46 | 7 | 2 | 26.1 | 4.95 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain and melted snow. |
|------------------------|----------------------|----------------------------|-----------|---------------------------|-----------------------|---------------------------|------------------------|--------------------------|
| PENNSYLVANIA—Con. | | | | | | | | |
| Johnstown | Cambria | David Peelor | 11 | 47 | 25 | 10 | 31.3 | In. 4.47 |
| Franklin | Venango | Rev. M. A. Tolman | 26 | 49 | 7 | 4 | 31.5 | 4.12 |
| Connellsville | Fayette | John Taylor | 22 | 60 | 9 | 10 | 33.2 | ..... |
| Brownsville | do | J. Allen Hubbs, M. D. | 22 | 58 | ..... | ..... | 36.8 | ..... |
| New Castle | Lawrence | E. M. McConnell | 27 | 50 | 7 | 11 | 31.8 | ..... |
| Beaver | Beaver | Rev. R. T. Taylor | 11 | 52 | 7 | 16 | 36.0 | 4.60 |
| Canonsburg | Washington | Rev. Wm. Smith, D. D. | 11 | 64 | 7 | 8 | 34.3 | 2.32 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 33.1 | 5.24 |
| DELAWARE. | | | | | | | | |
| Milford | Kent | Mrs. A. C. Whittier | 22 | 62 | 7 | 16 | 33.0 | 4.30 |
| MARYLAND. | | | | | | | | |
| Woodlawn | Cecil | Jas. O. McCormick | 12, 31 | 56 | 7 | 12 | 34.8 | 6.00 |
| Annapolis | A. Arundel | Wm. R. Goodman | 22 | 58 | 7 | 17 | 40.2 | 6.15 |
| St Inigoes | St. Mary's | Rev. J. Stephenson | 22 | 61 | 9 | 23 | 47.2 | ..... |
| Mt. St. Mary's | Frederick | Prof. C. H. Jourdan | 31 | 50 | 3 | 19 | 33.8 | 7.49 |
| Frederick | do | J. K. Hanshaw | 1 | 62 | 10 | 23 | 38.7 | 6.31 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 38.9 | 6.49 |
| DIST. COLUMBIA. | | | | | | | | |
| Washington | Washington | Smithsonian Instit'n | 12 | 58 | 7 | 24 | 38.7 | 5.21 |
| VIRGINIA. | | | | | | | | |
| Johnsontown | Northampton | C. R. Moore | 1, 12, 22 | 60 | 4 | 23 | 43.4 | 2.55 |
| Hampton | Elizab'th City | Jas. M. Sherman | 12 | 61 | 4 | 24 | 42.5 | 3.55 |
| Zuni Station | Isle of Wight | Rob't Binford | 22 | 63 | 10 | 24 | 44.4 | 4.53 |
| Bacon's Castle | Surry | B. W. Jones | 22 | 64 | 4, 10 | 22 | 43.5 | ..... |
| Comorn | King George | E. Tayloe | 1 | 68 | 4 | 23 | 39.8 | 2.90 |
| Vienna | Fairfax | H. C. Williams | 31 | 57 | { 3, 4, 7, 9, 24 } | 25 | 38.5 | 7.10 |
| Piedmont | Fauquier | Franklin Williams | 12 | 58 | 24 | 16 | 36.4 | 5.30 |
| Piedmont Station | do | Wm. A. Martin | 12 | 64 | 10 | 18 | 35.8 | 6.40 |
| Staunton | Augusta | J. C. Covell | 11 | 56 | 9, 24 | 21 | 37.4 | 5.13 |
| Lexington | Rockbridge | W. H. Ruffner | 1, 11, 12 | 60 | 9, 24 | 16 | 39.1 | 5.47 |
| Lynchburg | Bedford | Chas. I. Meriwether | 12 | 58 | 24 | 27 | 41.2 | ..... |
| Snowville | Pulaski | J. W. Stalmaker | 1, 11, 22 | 56 | 9, 24 | 10 | 33.3 | 6.70 |
| Near Wytheville | Wythe | Rev. Jas. A. Brown | 12 | 53 | 24 | 13 | 34.0 | 4.10 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 39.2 | 5.67 |
| WEST VIRGINIA. | | | | | | | | |
| Weston | Lewis | B. Owen | 11 | 60 | 24 | 11 | 34.5 | ..... |
| Cabell C. H. | Cabell | C. L. Roffe | 27 | 56 | 24, 29 | 24 | 37.2 | 1.30 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 35.9 | 1.30 |
| NORTH CAROLINA. | | | | | | | | |
| Kenansville | Duplin | Rev. Jas. M. Sprunt | 12 | 72 | { 8, 9, 10, 11 } | 28 | 49.7 | ..... |
| Goldsboro' | Wayne | E. W. Adams, A. M. | 1, 12, 28 | 69 | 4, 10 | 25 | 48.3 | 4.95 |
| Oxford | Granville | W. R. Hicks, M. D. | 12, 22 | 62 | 10 | 22 | 43.0 | 4.30 |
| Chapel Hill | Orange | David S. Patrick | 1 | 75 | 10 | 28 | 48.1 | ..... |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum temperature. | Date. | Minimum temperature. | Mean temperature. | Rain and melted snow. |
|------------------------|------------------|-----------------------------|------------|----------------------|------------|----------------------|-------------------|-----------------------|
| NORTH CAROLINA—Con. | | | | | | | | |
| Albemarle | Stanley | F. J. Kron | 1, 12 | 68 | 9 | 14 | 41.1 | In. 7.09 |
| Asheville | Buncombe | E. J. Aston | 22 | 60 | 9 | 15 | 37.5 | 5.60 |
| Do | do | J. T. E. Hardy, M. D. | 22 | 60 | 9 | 14 | 37.2 | ..... |
| Averages | | | | | | | 43.6 | 5.46 |
| SOUTH CAROLINA. | | | | | | | | |
| Gowdeysville | Union | Charles Petty | 1, 12 | 68 | 10 | 22 | 43.6 | 6.97 |
| GEORGIA. | | | | | | | | |
| Atlanta | Fulton | F. Deckner and son | 12 | 60 | 19, 23, 31 | 23 | 39.6 | 6.69 |
| Berne | Camden | H. L. Hillyer | 1 | 63 | 19 | 27 | 49.4 | 5.00 |
| Penfield | Greene | S. P. Sanford | 1 | 63 | 10 | 27 | 44.2 | 5.12 |
| Averages | | | | | | | 44.4 | 5.60 |
| ALABAMA. | | | | | | | | |
| Opelika | Lee | Miss Ella B. Shields | 13 | 67 | 23 | 27 | 42.5 | 9.25 |
| Carlowville | Dallas | H. L. Allison, M. D. | 12 | 68 | 23 | 28 | 47.2 | 6.71 |
| Moulton | Lawrence | Thos. M. Peters, A. M. | 11, 14 | 53 | 23 | 26 | 41.5 | 5.76 |
| Greene Springs | Hale | H. Tutwiler, LL. D. | 12, 13 | 63 | 23 | 25 | 44.4 | 4.20 |
| Mobile | Mobile | Lewes B. Taylor | 21 | 70 | 23 | 30 | 51.0 | 4.18 |
| Averages | | | | | | | 46.0 | 5.21 |
| FLORIDA. | | | | | | | | |
| Port Orange | Volusia | Mrs. E. H. Hawks | 1 | 81 | 19 | 33 | 58.3 | ..... |
| Jacksonville | Duval | A. S. Baldwin | 1 | 78 | 19 | 34 | 55.8 | 3.50 |
| Pilatka | Putnam | Gen. G. D. Robinson | 1 | 82 | 19 | 34 | 57.2 | 4.52 |
| Ocala | Marion | Edward Barker | 2 | 89 | 8 | 26 | 58.2 | ..... |
| Chattahoochie | Gadsden | Malachi Martin | 18 | 74 | 21 | 32 | ..... | 1.00 |
| Averages | | | | | | | 57.4 | 3.01 |
| TEXAS. | | | | | | | | |
| Houston | Harris | Miss E. H. Baxter | 4, 19, 31 | 69 | 23 | 27 | 49.6 | ..... |
| Austin | Travis | J. Van Nostrand | 10 | 72 | 22 | 19 | 46.6 | 1.32 |
| Clinton | De Witt | A. C. White, M. D. | 9, 10 | 75 | 23 | 26 | 50.5 | 0.74 |
| Averages | | | | | | | 48.9 | 1.03 |
| MISSISSIPPI. | | | | | | | | |
| Grenada | Yalabusha | Albert Moore | 10, 11, 31 | 60 | 23 | 20 | 44.6 | 7.40 |
| Near Brookhaven | Lawrence | Mrs. W. E. A. Keenan | 10, 12 | 70 | 22 | 25 | 50.5 | 8.50 |
| Natchez | Adams | Wm. McCary | 10, 11 | 66 | 23 | 24 | 47.7 | 8.54 |
| Marion C. H. | Lauderdale | Thos. W. Florens | 12 | 76 | 15, 29 | 24 | 49.8 | 5.20 |
| Columbus | Lowndes | James S. Sull | 14 | 61 | 23 | 24 | 43.7 | 5.73 |
| Averages | | | | | | | 47.3 | 7.07 |
| ARKANSAS. | | | | | | | | |
| Helena | Phillips | O. F. Russell | 12 | 63 | 23 | 20 | 43.7 | ..... |
| TENNESSEE. | | | | | | | | |
| Elizabethton | Carter | Chas. H. Lewis | 27 | 60 | 9 | 16 | 37.7 | 3.60 |
| Tusculum College | Green | S. S. and W. S. Doak | 13, 26 | 52 | 24 | 24 | 37.5 | 3.40 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tem- perature. | Rain and melted snow. |
|--------------------------|------------|-------------------------|--------------------|---------------------------|-----------|---------------------------|------------------------|--------------------------|
| TENNESSEE.—Con'd. | | | | | | | | |
| Lookout Mountain | Hamilton | Rev. C. F. P. Bancroft. | 12 | 61 | 23 | 19 | 40.7 | In. |
| Austin | Wilson | P. B. Calhoun. | 11 | 62 | 23 | 20 | 38.8 | 3.94 |
| Clarksville | Montgomery | Prof. Wm. M. Stuart. | 11 | 57 | 23, 24 | 23 | 37.5 | 4.14 |
| Trenton | Gibson | W. T. Grigsby | 7 | 62 | 24 | 21 | 41.4 | 5.30 |
| Memphis | Shelby | Ed. Goldsmith | 11 | 57 | 23 | 20 | 39.6 | 4.68 |
| Averages | | | | | | | 39.0 | 4.18 |
| KENTUCKY. | | | | | | | | |
| Pine Grove | Clark | Sam'l D. Martin, M. D. | 4 | 56 | 24 | 18 | 36.0 | 3.85 |
| Danville | Boyle | O. Beatty | 4, 31 | 55 | 24 | 20 | 39.8 | 3.18 |
| Shelby City | do | Howard Shriver | 11, 27 | 53 | 24 | 19 | 37.2 | 3.28 |
| Near Louisville | Jefferson | Mrs. L. Young | 11 | 54 | 23 | 22 | 36.1 | 2.88 |
| Averages | | | | | | | 37.3 | 3.30 |
| OHIO. | | | | | | | | |
| Stenbenville | Jefferson | Jas. B. Doyle | 22 | 54 | 7 | 15 | 35.7 | 3.32 |
| Painesville | Lake | E. J. Ferris | 11 | 47 | 3, 21 | 20 | 31.9 | 2.33 |
| Gilmore | Tuscarawas | Sam'l M. Moore | 27 | 56 | 3, 7 | 16 | 34.0 | 6.10 |
| Milnersville | Guernsey | Rev. D. Thompson | 11 | 53 | 7 | 5 | 32.1 | ----- |
| Cleveland | Cuyahoga | Mr. and Mrs. Hyde | 11 | 49 | 20 | 19 | 32.4 | 3.08 |
| Gallipolis | Gallia | A. P. Rodgers | 4, 27 | 52 | 9, 24 | 18 | 35.9 | 2.81 |
| Kelley's Island | Erie | Geo. C. Huntington | 11, 15, 31 | 42 | 3 | 19 | 32.3 | 1.99 |
| Sandusky | do | Thos. Neill | 11 | 47 | 3, 20 | 18 | 33.6 | 2.46 |
| North Fairfield | Huron | O. Burrass | 11 | 48 | 3 | 16 | 32.5 | 2.69 |
| Westerville | Franklin | Prof. John Haywood | 31 | 50 | 20 | 19 | 33.9 | 3.06 |
| New Holland | Pickaway | John R. Wilkinson | 11 | 62 | 3, 18 | 20 | 38.4 | 5.11 |
| North Bass Island | Ottawa | Geo. R. Morton, M. D. | 31 | 45 | 3 | 17 | 31.5 | 2.42 |
| Marion | Marion | H. A. True, M. D. | 26 | 48 | 3 | 12 | 31.1 | 3.60 |
| Hillsboro' | Highland | J. McD. Mathews | 11 | 50 | 3 | 19 | 32.6 | 2.93 |
| Toledo | Lucas | J. B. Trembly, M. D. | 15, 31 | 45 | 3 | 13 | 31.4 | 2.46 |
| Bowling Green | Wood | John Clarke | 31 | 48 | 3 | 10 | 32.4 | 4.05 |
| Kenton | Hardin | C. H. Smith, M. D. | 26 | 54 | 23 | 19 | 38.0 | 3.63 |
| Urbana University | Champaign | M. G. Williams | 26 | 49 | 3 | 15 | 31.5 | 3.12 |
| Bethel | Clermont | Geo. W. Crane | 11 | 52 | 24 | 18 | 43.6 | 2.50 |
| Jacksonburg | Butler | I. B. Owsley, M. D. | 26 | 47 | 3 | 19 | 33.3 | 3.81 |
| Mt. Auburn Inst'e. | Hamilton | Prof. S. A. Norton | 11 | 52 | 3, 20, 24 | 22 | 34.7 | 3.70 |
| Cincinnati | do | G. W. Harper | 15 | 52 | 3, 24 | 20 | 34.6 | 2.46 |
| Do | do | R. C. Phillips | 12, 15 | 51 | 20, 24 | 26 | 38.6 | 3.50 |
| College Hill | do | John W. Hammitt | 11 | 48 | 3 | 19 | 32.7 | 5.63 |
| Averages | | | | | | | 34.1 | 3.38 |
| MICHIGAN. | | | | | | | | |
| Monroe City | Monroe | Miss H. I. Whelpley | 30 | 48 | 20 | 16 | 31.1 | 2.00 |
| Adrian | Lenawee | J. W. Helme | 11 | 40 | 3 | 6 | 25.8 | 4.44 |
| State Agr'l College | Ingham | Prof. R. C. Kedzie | 26 | 45 | 3 | 0 | 28.2 | 2.11 |
| Litchfield | Hillsdale | R. Bullard | 26 | 43 | 3 | 6 | 27.7 | 2.70 |
| Coldwater | Branch | N. L. Southworth | 26 | 47 | 3, 8 | 10 | 27.7 | 4.23 |
| Northport | Leelenaw | Rev. Geo. N. Smith | 25 | 42 | 24 | 15 | 27.7 | 3.16 |
| Muskegon | Muskegon | H. A. Pattison | 10, 11, 26, 27, 29 | 46 | 20, 21 | 16 | 31.9 | 6.20 |
| Otsego | Allegan | Milton Chase, M. D. | 9 | 51 | 26 | 16 | 36.5 | ----- |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain and melted snow. |
|--------------------|-----------------|-----------------------------------|--------|---------------------------|------------|---------------------------|------------------------|--------------------------|
| MICHIGAN—Con'd. | | | | | | | | |
| Copper Falls..... | Keewenaw.... | S. H. Whittlesey, M. D. | 9 | 35 | 23 | —4 | 18.6 | 4.65 |
| Ontonagon..... | Ontonagon.... | Edwin Ellis, M. D.... | 10 | 42 | 24 | —2 | 25.0 | ..... |
| Homestead..... | Benzie..... | Geo. E. Steele..... | 10 | 41 | 24 | 14 | 28.0 | ..... |
| Averages..... | | | | | | | 28.0 | 3.69 |
| INDIANA. | | | | | | | | |
| Anrora..... | Dearborn..... | Geo. Sutton, M. D.... | 11 | 53 | 24 | 15 | 33.9 | 3.34 |
| Vevay..... | Switzerland.... | Chas. G. Boerner..... | 11 | 51 | 24 | 18 | 35.7 | 3.47 |
| Mt. Carmel..... | Frauklin..... | J. A. Applegate and daughters. | 11 | 47 | 20, 22, 23 | 22 | 33.2 | 2.35 |
| Muncie..... | Delaware..... | G. W. H. Kemper, M. D. | 10, 26 | 50 | 3 | 11 | 32.2 | 2.60 |
| Laconia..... | Harrison..... | Adam Crozier..... | 11 | 55 | 24 | 21 | 35.6 | 2.87 |
| Columbia City..... | Whitley..... | Drs. McCoy and Max- well. | 11 | 51 | 3, 23 | 15 | 32.4 | 1.63 |
| Knightstown..... | Rush..... | D. Deem..... | 11 | 48 | 3 | 13 | 31.3 | 3.36 |
| Indianapolis..... | Marion..... | J. V. Woolen, M. D.... | 11 | 49 | 3, 24 | 14 | 32.4 | 2.42 |
| Rensselaer..... | Jasper..... | J. H. Loughridge..... | 11 | 45 | 23 | 5 | 26.1 | 2.35 |
| Lafayette..... | Tippecanoe..... | J. W. Newton..... | 14, 15 | 46 | 3, 20 | 10 | 30.6 | 4.50 |
| Merom..... | Sullivan..... | Thomas Holmes..... | 11 | 50 | 20 | 10 | 32.3 | 2.55 |
| New Harmony..... | Posey..... | John Chappellsmith.. | 11 | 54 | 20, 23 | 18 | 35.0 | 2.58 |
| Harveysburg..... | Fountain..... | B. C. Williams, M. D.. | 11 | 50 | 20 | 6 | 31.7 | 2.70 |
| Averages..... | | | | | | | 32.5 | 2.82 |
| ILLINOIS. | | | | | | | | |
| Chicago..... | Cook..... | J. G. Langguth, jr.... | 10, 15 | 46 | 20 | 10 | 30.6 | 2.04 |
| Near Chicago..... | do..... | Sam'l Brookes..... | 10, 11 | 42 | 3, 20 | 8 | 26.9 | ..... |
| Evanston..... | do..... | Prof. Oliver Marey.... | 10 | 45 | 20 | 8 | 27.9 | 2.99 |
| Marengo..... | McHenry..... | O. P. Rogers..... | 11 | 48 | 20, 23 | 1 | 24.3 | 2.60 |
| Mattoon..... | Coles..... | W. E. Henry..... | 30 | 49 | 20 | 8 | 32.5 | 3.31 |
| Aurora..... | Kane..... | Dr. A. Spaulding..... | 11 | 43 | 20 | 3 | 25.1 | 3.13 |
| Louisville..... | Clay..... | D. H. Chase, M. D.... | 11, 29 | 50 | 20 | 8 | 34.8 | 3.80 |
| Golconda..... | Pope..... | Wm. V. Eldridge..... | 14 | 62 | 26 | 10 | 38.1 | 3.97 |
| Belvidere..... | Boone..... | G. B. Moss..... | 10, 26 | 42 | 23 | —3 | 24.1 | 2.71 |
| Sandwich..... | De Kalb..... | N. E. Ballou, M. D.... | 10, 11 | 46 | 20, 23 | 2 | 26.1 | 3.17 |
| Ottawa..... | La Salle..... | Mrs. E. H. Merwin..... | 10 | 50 | 20 | 9 | 31.4 | 1.64 |
| Decatur..... | Macon..... | Timothy Dudley..... | 29 | 48 | 23 | 6 | 29.9 | 3.65 |
| Winnebago..... | Winnebago..... | J. W. and Miss Tolman | 10 | 41 | 20 | —3 | 23.3 | 2.86 |
| Rochelle..... | Ogle..... | Dan'l Carey..... | 10 | 45 | 20 | 0 | 26.9 | ..... |
| Wyanet..... | Bureau..... | E. S. and Miss I. G. Phelps. | 10, 26 | 48 | 20 | —1 | 28.0 | 3.02 |
| Tiskilwa..... | do..... | Verry Aldrich..... | 11 | 48 | 20 | 4 | 29.3 | 3.30 |
| Hennepin..... | Putnam..... | Smiley Shepherd..... | 10 | 50 | 20 | —5 | 29.0 | ..... |
| Peoria..... | Peoria..... | Fred'k Brendel..... | 10 | 48 | 20, 23 | 4 | 30.5 | 2.63 |
| Springfield..... | Sangamon..... | G. M. Brinkerhoff.... | 11 | 50 | 20 | 5 | 29.9 | ..... |
| Dubois..... | Washington.. | Wm. C. Spencer..... | 20 | 54 | 23 | 4 | 32.0 | 2.11 |
| Galesburg..... | Knox..... | Prof. Wm. Livingston.. | 30 | 49 | 20 | 0 | 32.8 | 2.00 |
| Manchester..... | Scott..... | Dr. J. and C. W. Grant | 29 | 52 | 19 | 12 | 30.7 | 2.67 |
| Mt. Sterling..... | Brown..... | Rev. A. Duncan..... | 10, 24 | 48 | 20 | 0 | 28.3 | 2.70 |
| Andalusia..... | Rock Island.. | E. H. Bowman, M. D.. | 10 | 54 | 20, 21 | —6 | 28.8 | ..... |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tem- perature. | Rain and melted snow. |
|-------------------------|------------------|-------------------------------|------------|---------------------------|------------|---------------------------|------------------------|--------------------------|
| ILLINOIS—Contin'd. | | | | | | | | |
| Augusta | Hancock | S. B. Mead, M. D. | 10 | 53 | 20 | — 3 | 26.4 | 2.08 |
| Warsaw | do | B. Whitaker | 24 | 58 | 20, 23 | 0 | 29.1 | 2.19 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 29.1 | 2.80 |
| WISCONSIN. | | | | | | | | |
| Manitowoc | Manitowoc | Jacob Lüps | 10, 31 | 41 | 24 | — 2 | 25.7 | 2.79 |
| Plymouth | Sheboygan | G. Moeller | 10 | 44 | 3 | — 1 | 21.0 | 2.50 |
| Hingham | do | John De Lyser | 10 | 47 | 3 | — 1 | 24.5 | ..... |
| Milwaukee | Milwaukee | I. A. Lapham, L.L.D. | 11, 12 | 45 | 24 | 1 | 26.4 | 2.79 |
| Appleton | Outagamie | J. C. Foyè | 10, 27 | 42 | 24 | — 2 | 25.6 | ..... |
| Geneva | Walworth | W. H. Whiting | 11 | 44 | 3, 22, 23 | 6 | 24.6 | 2.55 |
| Waupacca | Waupacca | H. C. Mead | 10 | 40 | 24 | —16 | 23.9 | ..... |
| Embarrass | do | E. Everett Breed | 10, 27 | 36 | 24 | —17 | 21.9 | 3.65 |
| Rocky Run | Columbia | W. W. Curtis | 10 | 41 | 20 | — 6 | 22.5 | 2.38 |
| Madison | Dane | W. W. Daniels | 10 | 40 | 23 | — 3 | 22.3 | 2.64 |
| Edgerton | Rock | H. J. Shints | 10, 11, 26 | 44 | 20, 23 | 2 | 25.6 | 3.40 |
| Baraboo | Sauk | M. C. Waite | 10, 27 | 36 | 20, 21, 23 | 0 | 21.3 | 5.50 |
| New Lisbon | Juneau | J. L. Dungan | 10, 26 | 45 | 20 | —10 | 22.3 | ..... |
| Bayfield | Bayfield | Andrew Tate | 9, 27 | 38 | 23 | —12 | 19.3 | ..... |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 23.4 | 3.13 |
| MINNESOTA. | | | | | | | | |
| Beaver Bay | Lake | C. Wieland | 10 | 45 | 23 | —10 | 20.5 | 0.90 |
| Afton | Washington | Dr. B.F. & Mrs. Babcock | 10 | 40 | 23 | —16 | 19.0 | 0.85 |
| St. Paul | Ramsey | Rev. A. B. Paterson | 10 | 41 | 23 | —10 | 20.8 | 0.96 |
| Minneapolis | Hennepin | Wm. Cheney | 9 | 39 | 23 | —18 | 18.1 | 0.95 |
| Sibley | Sibley | C.W. & C.E. Woodbury | 9 | 41 | 23 | —17 | 17.7 | 0.48 |
| Koniska | McLeod | Thomas M. Young ..... | ..... | ..... | 23 | —16 | ..... | ..... |
| New Ulm | Brown | Charles Roos | 9 | 42 | 23 | —14 | 20.5 | 0.50 |
| Madelia | Watsonwan | W. W. Murphy | 9 | 42 | 23 | —20 | 20.4 | 1.28 |
| White Earth | Becker | Dr. D. Pyle | 8 | 41 | 23 | —23 | 14.1 | 0.93 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 18.9 | 0.86 |
| IOWA. | | | | | | | | |
| Clinton | Clinton | Dr. J. P. Farnsworth | 6 | 48 | 20, 23 | 0 | 24.0 | 2.50 |
| Waukon | Allamakee | E. M. Hancock | 10 | 40 | 23 | —12 | 20.1 | ..... |
| Dubuque | Dubuque | Asa Horr | 10, 11 | 44 | 23 | 0 | 25.4 | 2.62 |
| Monticello | Jones | M. M. Moulton | 25 | 38 | 22 | — 4 | 21.1 | 2.25 |
| Bowen's Prairie | do | Sam'l Woodworth | 10 | 48 | 23 | — 8 | 23.7 | 3.43 |
| Ft. Madison | Lee | Dan'l McCready | 10 | 51 | 23 | 0 | 28.5 | 2.39 |
| Guttenberg | Clayton | Jas. P. Dickerson | 26 | 42 | 24 | —12 | 21.2 | ..... |
| Mt. Vernon | Linn | Prof. Alonzo Collins | 10 | 46 | 20 | — 3 | 24.6 | ..... |
| Iowa City | Johnson | Prof. Theo. S. Parvin | 10 | 46 | 20, 23 | — 2 | 25.5 | 3.00 |
| Independence | Buchanan | Geo. Warne, M. D. | 10 | 44 | 23 | —13 | 22.6 | 8.50 |
| Near Independence | do | Lucia M. Wheaton | 11 | 44 | 23 | —10 | 19.2 | 5.20 |
| Waterloo | Black Hawk | T. Steed | 10 | 44 | 23 | —10 | 23.3 | ..... |
| Vinton | Benton | James Wood | 10 | 49 | 23 | — 6 | 24.4 | 4.06 |
| Rockford | Floyd | H. Wadey | 10 | 44 | 23 | — 6 | 23.9 | ..... |
| Newton | Jasper | A. Failer | 9 | 48 | 23 | —10 | 22.2 | 1.02 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum temperature. | Date. | Minimum temperature. | Mean temperature. | Rain and melted snow. |
|----------------------|------------------|--------------------------|-------|----------------------|--------|----------------------|-------------------|-----------------------|
| IOWA—Continued. | | | | | | | | |
| Algona..... | Kossuth..... | James H. Warren..... | 9 | 42 | 23 | —16 | 22.2 | 6.40 |
| West Bend..... | Palo Alto..... | Ph. Dorweiler..... | 9 | 40 | 23 | —15 | 20.3 | ..... |
| Mineral Ridge..... | Boone..... | Z. S. Sullivan..... | 3 | 49 | 23 | —7 | 25.8 | 2.51 |
| Boonesboro..... | do..... | E. Babcock..... | 3 | 46 | 23 | —8 | 25.2 | 1.70 |
| Fontanelle..... | Adair..... | A. F. Bryant..... | 3 | 53 | 23 | —2 | 23.5 | 2.73 |
| Rolfe..... | Pocahontas..... | Oscar I. Strong..... | 9, 10 | 45 | 23 | —12 | 24.5 | 0.64 |
| Grant City..... | Sac..... | Mr. and Mrs. Miller..... | 7 | 48 | 23 | —12 | 24.3 | 3.12 |
| Logan..... | Harrison..... | Jacob T. Stern..... | 3 | 48 | 23 | —4 | 25.9 | 2.70 |
| Woodbine..... | do..... | M. E. and R. Witter..... | 6 | 45 | 23 | —6 | 24.6 | 2.10 |
| Averages..... | | | | | | | 23.8 | 3.16 |
| MISSOURI. | | | | | | | | |
| St. Louis University | St. Louis..... | Rev. F. H. Stuntebeck. | 29 | 55 | 20 | 13 | 34.6 | 1.83 |
| Allenton..... | do..... | A. Fendler, M. D..... | 29 | 62 | 23 | 6 | 33.0 | 2.70 |
| Hematite..... | Jefferson..... | Jno. M. Smith..... | 29 | 63 | 23 | —4 | 35.2 | 2.25 |
| Rolla..... | Phelps..... | Homer Ruggles..... | 29 | 61 | 23 | 2 | 34.7 | 1.62 |
| Jefferson City..... | Cole..... | Nicolas de Wyl..... | 29 | 56 | 20 | 9 | 32.0 | ..... |
| Hermitage..... | Hickory..... | W. Moore, M. D..... | 10 | 53 | 23 | 4 | 31.2 | 2.40 |
| Bolivar..... | Polk..... | James A. Race..... | 26 | 60 | 22 | 8 | 37.3 | 4.40 |
| Harrisonville..... | Cass..... | John Christian..... | 9, 10 | 54 | 20, 23 | 0 | 30.1 | 1.62 |
| St. Joseph..... | Buchanan..... | Rev. H. Bullard..... | 3 | 56 | 23 | 4 | 31.8 | 2.20 |
| Oregon..... | Holt..... | Wm. Kaucher..... | 3 | 62 | 20 | 0 | 29.9 | 3.43 |
| Averages..... | | | | | | | 32.0 | 2.49 |
| KANSAS. | | | | | | | | |
| Atchison..... | Atchison..... | Dr. H. B. & Miss M. Horn | 10 | 56 | 23 | —4 | 29.9 | 1.65 |
| Leavenworth..... | Leavenworth..... | Dr. J. Stayman..... | 3, 10 | 55 | 23 | —8 | 28.5 | 1.33 |
| Olathe..... | Johnson..... | W. Beckwith..... | 3, 10 | 55 | 23 | 0 | 29.9 | 0.90 |
| Paola..... | Miami..... | L. D. Walrad..... | 8, 10 | 56 | 23 | 4 | 31.7 | 1.35 |
| Baxter Springs..... | Cherokee..... | Ingraham and Hyland. | 8, 10 | 60 | 22 | 6 | 33.4 | 3.30 |
| Lawrence..... | Douglas..... | Prof. F. H. Snow..... | 3 | 63 | 23 | 4 | 36.9 | 0.87 |
| Holton..... | Jackson..... | James Watters, M. D. | 3 | 59 | 22 | 0 | 29.7 | ..... |
| Neosho Falls..... | Woodson..... | Mrs. E. W. Groesbeck. | 10 | 55 | 22, 23 | —2 | 26.4 | 1.20 |
| Le Roy..... | Coffey..... | J. G. Shoemaker..... | 10 | 59 | 22 | 2 | 32.8 | 2.92 |
| State Agr. College. | Riley..... | Prof. B. F. Mudge..... | 9 | 58 | 22 | —3 | 31.2 | 0.52 |
| Council Grove..... | Morris..... | A. Woodworth, M. D. | 9 | 62 | 23 | —4 | 35.2 | 0.90 |
| Crawfordsville..... | Crawford..... | Percy Daniels..... | 10 | 60 | 20 | —3 | 31.9 | 4.20 |
| Averages..... | | | | | | | 31.5 | 1.74 |
| NEBRASKA. | | | | | | | | |
| Omaha Mission..... | Omaha Reserve | Rev. Wm. Hamilton..... | 9 | 58 | 23 | —5 | 28.5 | 2.36 |
| Elkhorn..... | Washington..... | John S. Bowen..... | 9 | 52 | 23 | —3 | 25.8 | ..... |
| De Soto..... | do..... | Charles Seltz..... | 9 | 52 | 23 | —5 | 24.7 | 4.26 |
| Bellevue..... | Sarpy..... | Mrs. E. E. Caldwell..... | 3 | 55 | 23 | 2 | 28.4 | 2.20 |
| Nebraska City..... | Otoe..... | P. Zahner..... | 3 | 54 | 20, 23 | —2 | 27.7 | 2.28 |
| Averages..... | | | | | | | 27.0 | 2.78 |
| UTAH TERRITORY. | | | | | | | | |
| Coalville..... | Summit..... | Thos. Bullock..... | 3, 8 | 43 | 21 | —14 | 20.6 | 0.25 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | Count | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain and melted snow. |
|----------------------------|------------------|-------------------------|----------------|---------------------------|--------|---------------------------|------------------------|--------------------------|
| CALIFORNIA. | | | | | | | | |
| Monterey | Monterey. | C. A. Canfield, M. D. { | 3, 6, 17. } ° | 65 | 21 | 27 | 48.9 | In. |
| Chico | Butte | W. F. Cheney, M. D. { | 18 } ° | 69 | 22 | 25 | 46.0 | 3.40 |
| Watsonville | Santa Cruz. | A. J. Compton | 2, 14, 15, } ° | 70 | 21 | 28 | 46.8 | 3.52 |
| Vacaville | Solano | Prof. J. C. Simmons. { | 16, 17 } ° | 76 | 21 | 29 | 43.5 | 4.43 |
| Cahto | Mendocino. | A. W. Thornton, M. D. { | 5 } ° | 65 | 21, 22 | 31 | 46.2 | ..... |
| Averages | | | | | | | 46.3 | 3.44 |
| MONTANA TERRITORY | | | | | | | | |
| Deer Lodge City. . . | Deer Lodge. . . | Granville Stuart | 3 | 46 | 19 | — 3 | 24.1 | 0.56 |
| WASHINGTON TER- RITORY. | | | | | | | | |
| Walla-Walla | Walla-Walla. . . | A. H. Simmons | 13 | 58 | 22 | 16 | 34.6 | 5.68 |

NOTES ON THE WEATHER.

FOR DECEMBER, 1869.

Steuben, Me.—Anchor ice in river 9th; severe rain storm 19th, and freshets 20th to 23d; snow and ice gone 31st. Last four months unparalleled for high winds.

West Waterville, Me.—Faint aurora 5th; fields nearly bare 31st. December snow-fall, 25.5 inches.

Gardiner, Me.—River closed 4th; auroras 5th, 7th; last of three weeks, good sleighing 27th. December mean average temperature for thirty-four years, 23.09°; 1869, 25.10°. Average December rain in thirty-four years, 3.93 inches; 1869, 4.74 inches. Mean temperature of 1869, 43.92°; rain-fall of 1869, 51.72 inches.

Lisbon, Me.—Teams crossed Androscoggin River on ice 20th to 27th. Sleighing gone 31st.

Norway, Me.—Faint auroras 5th, 14th; good sleighing 23d to 26th; snow nearly gone 31st. Mean temperature of 1869, 43.236°; rain-fall last eleven months, 52.46 inches; snow on forty-six days, ninety-six inches.

Cornishville, Me.—December average mean temperature for forty years, 21°; for 1869, 27.32°. Snow this month, twenty-four inches.

Stratford, N. H.—Warmest December in twelve years; but little snow on the ground, but pleasant.

Whitefield, N. H.—Aurora 5th; fourteen inches snow on ground 31st. Snow 24.25 inches in October, November, and December.

Tamworth, N. H.—Ground bare till 4th; auroras 7th, 14th, the last in ascending waves; twenty inches snow 25th; crows and blue jays 28th; snow nearly gone 31st. A favorable month.

Goffstown Center, N. H.—Last part of month warm. Snow gone 31st.

Lunenburg, Vt.—Month mild, less snow than usual; auroras visible nearly every fair night or evening.

North Craftsbury, Vt.—Beautiful aurora 5th; good sleighing 5th to 31st. Month 5.77° warmer than in 1868, and 4.43° than in 1867.

Woodstock, Vt.—Beautiful aurora 5th; ice thirteen inches thick 15th.

Near St. Albans, Vt.—Snow seven inches, first sleighing 19th; hail and rain 22d.

West Charlotte, Vt.—Bright aurora 6th; spring-like, robins singing 23d, first time since October 9th; snow nearly gone 31st. Mildest December for years.

Kingston, Mass.—Very mild December, ground scarcely frozen; grass green in sunny spots.

Topsfield, Mass.—Good sleighing first half of month; frost gone and plowing 25th; month closes pleasant. Rain in 1869, 47.219 inches.

Milton, Mass.—Last quarter of month remarkably warm.

Lunenburg, Mass.—Open ground free from snow and frost 1st and 31st; hard gale 1st; drifting snow-storm 6th; month still and mild. Average mean temperature for thirty years, 28.57° ; this, 22.61° .

Amherst, Mass.—Drifting snow-storm 4th to 6th; sleighing 7th to 25th; snow off open ground, 31st.

Middletown, Ct.—River closed 8th, reopened 28th, and navigation resumed 30th.

Brookfield, Ct.—Except first part, month mild; last week spring-like, but roads nearly impassable.

Moriches, N. Y.—First third of month some cold days, remainder very mild.

South Hartford, N. Y.—Canals closed and many boats frozen in 9th.

Fort Edward, N. Y.—Month very mild, but little snow and sleighing.

Garrison's, N. Y.—Ground has been frozen six inches; no frost 31st.

New York City.—Auroras 13th, 15th; meteors morning of 13th. Month warm, moist, cloudy; six inches snow 6th, but clear 7th to 16th.

Cooperstown, N. Y.—Unusually mild December, only a few days sleighing.

North Hammond, N. Y.—Tremendous gale 22d. Month closes with ground frozen hard; little snow, no sleighing.

Houseville, N. Y.—Snow, windy, 3d, 4th, 18th; snow gone 11th; sleighing good, four to six inches; snow on ice 31st.

Leyden, N. Y.—Autumn mean temperature, 42.63° . Mean temperature of 1868, 42.40° ; of 1869, 41.88° . Rain and melted snow of 1868, 53.40 inches; of 1869, 69.12 inches. Snow of 1868, 19 feet $2\frac{1}{2}$ inches; of 1869, 18 feet 5 inches; of December 1869, three feet.

South Trenton, N. Y.—Balmy Christmas; warm December; ground bare, frozen only four inches; swamps full of water and scarcely frozen.

Depauville, N. Y.—Auroras 5th, 7th, 30th. Ground bare much of the month. In 1869, rain on ninety-one days, snow on fifty-nine, sleighing on ninety-five. No frost May 27 to September 28. Mean temperature, 43.4° ; rain-fall, 50.34 inches; snow 105.55 inches.

North Volney, N. Y.—Hardly any snow; roads muddy; stock grazing in the fields. Month 5.28° warmer than in 1868.

Palermo, N. Y.—Mean temperature of 1869, 43.91° ; of spring, 28.5° ; summer, 65.6° ; autumn, 45.1° ; winter months, 24.6° . Rain, 35.8 inches; snow, eighty-three inches.

Buffalo, N. Y.—Dark, stormy month; only twenty-eight hours sunshine in its thirty-one days. No ice in lake, harbor, or canal; no frost in ground; air, spring-like.

Newark, N. J.—Mean temperature above sixteen out of twenty-six Decembers, and above the average of the twenty-six; rain-fall also ex-

ceeds the average 1.4 inch. A few days' sleighing on the snow of the 6th.

Trenton, N. J.—Rain-fall eighty-three days in 1869, 43.91 inches; and eighty-six entirely clear days.

Rio Grande, N. J.—A large black snake killed while sunning itself on the 31st.

Moorestown, N. J.—Northeast rain-storm 26th to 28th, with fogs 27th.

Newfield, N. J.—Mild December; more than half was rainy and cloudy; last half, good plowing. Mean temperature of 1869: Spring, 49.2°; summer, 74.2°; autumn, 51.2°; winter, 35.3°; the year, 52.4°. From frost (May 6) to frost, (September 28,) one hundred and forty-four days, of mean temperature 69.6°. Thermometer above 32° from April 25 to October 20.

Greenwich, N. J.—*Viola pedata* blooming under the snow 11th—dandelion in blossom 19th. Three days' storm 25th to 28th; not cold after 10th, but cloudy and stormy.

Vineland, N. J.—Temperature of 1869: Spring, 50.27°; summer, 76.46°; autumn, 52.18°; winter, 36.48°; the year, 53.85°; of 1868, 52.33°. Rain of 1868, 56.305 inches; of 1869, 50.655 inches.

Dyberry, Pa.—Delaware and Hudson canal closed 4th; sleighing 7th; ice nine inches thick 25th; sleighing poor 31st.

Fallsington, Pa.—Snow, rain, sleet, severe snow-storm, 6th; severe gale and rain 18th; hail and rain 22d.

Plymouth Meeting, Pa.—Snow 6th, and sleighing till 12th; no frozen ground after 25th; mean temperature of 1866, 51.40°; 1867, 49.91°; 1868, 49.91; 1869, 51.49°.

Factoryville, Pa.—Snow, frost, ice, gone 29th; spring weather 30th, 31st. Mean temperature 1869, 45.95°; rain, 44.23 inches.

West Chester, Pa.—Ice four inches thick 11th; frost gone 31st.

Harrisburg, Pa.—Canal closed 3d, grain green; no ice nor snow in the valley 31st.

Fountain Dale, Pa.—Month 5.29° warmer than in 1868. Mean temperature of 1869, 50.85°.

Tioga, Pa.—Heavy fall of snow 18th, and nearly gone 23d; robins 30th; warm and pleasant 31st.

Grampian Hills, Pa.—Cloudy and cool December; no heavy rains, snows, or winds; roads mostly good; ground covered with snow.

Johnstown, Pa.—Ground not yet frozen three inches deep.

Connellsville, Pa.—Mean temperature—winter, 1868–9, 31.48°; spring, 1869, 46.29°; summer, 70.51°; autumn, 47.02°; year, 49.40°.

Newcastle, Pa.—Month about four degrees warmer than last four Decembers; last week like spring.

Beaver, Pa.—An unusually mild but cloudy December.

Milford, Del.—Rain 4th, and all day 5th, and till 3 p. m. 6th, then snow; clear and cold 7th.

Woodlawn, Md.—Slush ice in Susquehanna 7th to 12th. Mean temperature of 1869, 52.36°; rain-fall 48.36 inches.

Mount St. Mary's, Md.—Month warmer than in 1868; mean temperature of 1869, 50.68°; rain-fall, 47.76 inches.

Hampton, Va.—Not a flake of snow and but little ice this month.

Zumi Station, Va.—Roses gathered in open air on New Year's day! Mean temperature of 1869, 58.54°; rain-fall, 37.78 inches.

Piedmont, Va.—Heavy wind, rain, hail, and badly drifted snow 18th—remained till 26th.

Near Wytheville, Va.—Very cold December; no Indian summer.

Albemarle, N. C.—Much rain and wind since 21st; great breadth sown of grain, good stand.

Gowdeysville, S. C.—Snow 18th; white frosts seven mornings.

Berne, Ga.—Strong gale 17th; severe frosts 19th, 20th; thunder and lightning 22d.

Penfield, Ga.—White frosts 30th, 31st; very smoky 31st.

Moulton, Ala.—As usual, unfavorable month for out-door labor; five inches snow 17th, 18th.

Havana, Ala.—Very heavy frosts 29th, 30th, 31st; thunder and lightning 31st.

Mobile, Ala.—Heavy white frosts 8th, 16th; southeast gale 21st; ice 23d.

Jacksonville, Fla.—Five frosts, harmless; mean temperature but a little below average of twenty-four Decembers.

Ocala, Fla.—Frosts nights of 7th, 18th; the last, with north wind and mercury at twenty-two degrees, froze vegetables hard; but before midnight south wind set in, and a thaw.

Houston, Texas.—First ice 18th; gutters and ponds frozen 22d, 23d; thunder shower 24th.

Austin, Texas.—First general frost 7th, and five after 15th.

Clinton, Texas.—Severe frosts 15th, 16th; first ice 18th, 22d, 25th, 29th.

Natchez, Miss.—Frost, ice 8th; snow-flakes 15th; almost continuous rain four days, 19th to 22d.

Marion, Miss.—Heavy thunder and lightning south and southwest 21st; heavy frost and bright, clear day 29th.

Elizabethton, Tenn.—Much cloudiness, but not frost enough to prevent plowing.

Clarksville, Tenn.—Melting snows 17th, 18th; drifting snow 20th; then sleet and rain 21st; then rain and mist 22d.

Trenton, Tenn.—First snow 20th, ice 24th; last three days pleasant, birds singing; ground not yet frozen an inch.

Pine Grove, Ky.—A dark, damp December, with six inches drifted snow.

Shelby City, Ky.—Snow, four inches, 21st; nearly gone 22d; first skating 24th.

Painesville, Ohio.—Darkest December known; not one entirely clear day, and only two pleasant ones.

North Fairfield, Ohio.—Showery; distant thunder 11th; snow gone 22d.

North Bass Island, Ohio.—Lake frozen 20th, and open again 24th to 31st; snow in December 6.25 inches.

Hillsboro, Ohio.—Mean temperature of 1869, 50.236°; rain-fall 38.008 inches.

Toledo, Ohio.—Auroras 25th, 26th; very pleasant 30th, 31st; much cloudy, stormy weather. The year had more rain than any on my record, and, except 1866, a lower temperature.

Jacksonburg, Ohio.—Snow, hail, rain 4th, and with sleet 21st; sun invisible 9th to 19th.

Mount Auburn Institute, Ohio.—A dull, damp, cloudy month; sun seldom seen.

Monroe City, Mich.—Adjourned Indian summer 30th, 31st.

Litchfield, Mich.—Aurora, 18th; no sleighing after the 20th; wheeling excellent 31st. A cloudy, dark month.

Northport, Mich.—A mild December; not snow enough to protect the undug potatoes from freezing.

Homestead, Mich.—Sunshine on eleven days only; less snow than usual; rivers and large lakes and bays open.

Vevay, Ind.—Heavy fall of snow; rain 21st, 22d.

Mt. Carmel, Ind.—A dark month, only three clear days; no hard freezing, and little light.

Laconia, Ind.—Hardly a clear day in October, November, and to December 28th, then delightful to 31st.

Mattoon, Ill.—Few days of sunshine, and none wholly clear.

Louisville, Ill.—First half of month cold, rainy, cloudy; last half sunny, freezing nights.

Aurora, Ill.—Mild month; plowing till 17th; little snow; ground frozen about six inches 31st.

Belvidere, Ill.—Month of even temperature, roads smooth, good sleighing and wheeling. Mean temperature of 1869, 44.85°.

Winnebago, Ill.—Nine inches snow, with high wind 21st, 22d.

Tiskilwa, Ill.—Good month for out-door work; little freezing, but much cloudy weather.

Hennepin, Ill.—Cloudy, smoky, and misty; frost and mud alternating. Illinois River closed 20th, but ice bears only light skaters.

Dubois, Ill.—Great south wind and some rain, 8th to 11th; severe northeast snow storm 21st.

Andalusia, Ill.—Mississippi partly closed 23d, and reopened 31st. But little frost in ground.

Plymouth, Wis.—December average mean temperature of five years twenty-one degrees, this, twenty-four degrees; rain fall 1.7 inches, this, 2.5 inches.

Milwaukee, Wis.—River closed 2d. Average annual mean temperature for twenty-seven years 45.92°, of 1869, 44.44°; of December for twenty-seven years, 25.45°, this, 26.37°. Annual rain for twenty-seven years, 30.31 inches, for 1869, 37.81 inches; of December for twenty-seven years, 1.91 inches, this month 2.79 inches.

Waupaca, Wis.—On eight days sixteen inches snow.

Embarrass, Wis.—Snow-birds 6th; Aurora 29th. A mild but cloudy December.

Baraboo, Wis.—Worst December known in Sauk County for cold, cloudiness, snow, good sleighing, and money tightness.

New Lisbon, Wis.—Cloudy and stormy days, twenty-four, (eighteen in succession;) clear, four; mixed three.

Afton, Minn.—Bright aurora 4th; four inches snow in month.

Minneapolis, Minn.—Cloudy but pleasant month, good sleighing latter part.

Koniska, Minn.—Pleasantest December in fourteen years; ice sixteen inches thick.

Waukoa, Iowa.—Aurora 4th; eighteen days sleighing, month mild.

Dubuque, Iowa.—Brilliant meteor, north, 3d; aurora 4th.

Bowen's Prairie, Iowa.—Cloudy till 19th, rest pleasant.

Iowa City, Iowa.—Very mild month. December average mean temperature for thirty years, 23.55°, this, 25.46°.

Guttenberg, Iowa.—By 31st, neither sledding nor wheeling; cattle look well.

Independence, Iowa.—Snow and frost gone 11th; first sunshine for many days 19th.

Algona, Iowa.—Finest December known here; but little snow.

West Bend, Iowa.—Faint aurora 4th. Snow on nine and rain on five days; month pleasant; snow nearly gone 31st.

Mineral Ridge, Iowa.—Much snowing and raining till 22d, then fine weather till 30th.

Boonesboro, Iowa.—Month had thirteen entirely cloudy, and five clear days, and was three degrees above average of fourteen years.

Hematite, Mo.—Ducks and bluebirds 25th to 31st. Mean temperature of 1869, 55.14°; rain-fall 45.5 inches.

Jefferson City, Mo.—Faint aurora 29th; heavy snow 21st.

Oregon, Mo.—Faint auroras 4th, 5th; snow and frost gone 8th; good sleighing 23d, going 24th.

Atchison, Kan.—River blocked with ice 21st, 22d; month 6.6° warmer than in 1868.

Leavenworth, Kan.—Mean temperature of 1869, 50.5°, one-half degree below 1868; rain-fall 43.35 inches, 1.97 inches above average of last three years.

Burlington, Kan.—Only rains in month 9th, 10th; first ice on river 19th; warm and pleasant 24th to 31st.

Holton, Kan.—A pleasant fall, with some cold days; December very cloudy; grain looks promising.

Manhattan, Kan.—Bright aurora 5th; Kansas River frozen 22d; open again 25th.

Le Roy, Kan.—Ice on Neosho River, three inches, nearly melted 26th.

Council Grove, Kan.—Beautiful weather to 9th; ground frozen six inches 15th; four inches snow 21st; snow gone 28th; month dry and pleasant.

Omaha Mission, Neb.—River closed 1st, open 12th, closed again 20th; month pleasant as a whole.

Belleue, Neb.—Aurora 5th; month cloudy, not stormy, and 5.9° warmer than in 1868.

Nebraska City, Neb.—Aurora 5th; river closed 23d; crows in great numbers 26th.

Harrisburg, Utah.—Cold, dry weather, preventing sowing, and damaging sowed grain. Must depend on the States for garden seeds, ours destroyed by grasshoppers.

Watsonville, Cal.—Coldest December in five years; uplands too dry to plow; only half our usual rain.

Vacaville, Cal.—First ice 19th; good grain sowing; more rain here than in rest of the State.

Cahto, Cal.—First ground freeze 5th; hail 25th.

Deer Lodge City, Montana Ter.—Flies, swarms of small 2d, green 26th; aurora, white 4th, beautiful "black" 5th, faint "black" 6th; river closed 17th. Seven "Chinook" (S. W., or rain) winds this month.

Walla-Walla, Wash. Ter.—Aurora 22d; snowed 23d, while a "Chinook" wind blew and rain fell on the Blue Mountains, twelve miles distant; mild 25th to 31st.

MONTHLY REPORT

OF

THE DEPARTMENT OF AGRICULTURE,



FEBRUARY, 1870.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1870.

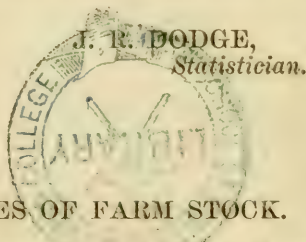
MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE,
Statistical Division, March 10, 1870.

SIR: I herewith report for publication statistics showing the relative number and prices of farm stock, in February, as compared with returns made in February of last year, with extracts from letters of regular and special correspondents; together with original papers on the following subjects: Beet sugar in Europe and in Wisconsin; a New Hampshire farm; tax on farmers as produce brokers; ramie; the Colorado grasshopper; tests of department seeds; agriculture in Lane County, Oregon; premium crops in New York; European agricultural statistics; water for teams; grain in Northern Europe; facts from various sources; and meteorological tables.

Respectfully,

Hon. HORACE CAPRON,
Commissioner.



RELATIVE NUMBERS AND PRICES OF FARM STOCK.

The returns of February, 1870, indicate a very slight increase of horses in the eastern and middle States, an advance of five per cent. in the Ohio Valley, thirteen per cent. in growing States west of the Mississippi, and eight per cent. in the cotton States. A slight increase in the number of mules is noted in nearly all of the States, most noticeable in Alabama, Mississippi, and Arkansas, and in Kansas and Nebraska.

The number of cattle are gradually augmenting, though not in equal proportion or in all the States. In the following States returns indicate a slight falling off from last year: Maine, Connecticut, New Jersey, Pennsylvania, North Carolina, Georgia, Louisiana, Texas, Kentucky, Illinois, Indiana, and Ohio. The States beyond the Mississippi show the largest relative increase.

The swine, mostly pigs and store hogs, appear to be somewhat reduced in numbers in all the New England States except Massachusetts, in New Jersey, Pennsylvania, Maryland, Virginia, North Carolina, Georgia, Alabama, Mississippi, Texas, West Virginia, Illinois, Indiana, Ohio, and Michigan. An increase of twenty-one per cent. is indicated in Kansas, and a considerable increase is shown in Missouri, Minnesota, Nebraska, California, and Oregon. On the whole, the supply of young swine is scarcely equal to the wants of our increasing population.

Sheep have increased in numbers largely in California, considerably in Kansas, Missouri, and Arkansas, and to some extent in Nebraska. A slight decline is indicated in most of the other States, not sufficient to reduce materially the aggregate numbers.

The prices of horses and mules have increased in some of the southern States; swine have fully maintained last year's rates, and the tendency in prices of sheep is upward. Cattle are somewhat lower in price than last year in most of the States, but cows are scarcely affected by the decline.

Table showing the relative proportion, in tenths, of the farm stock of the States named, in comparison with the number in February, 1869, and the prices of the same, for the different ages, in February, 1870.

| States. | HORSES. | | | | MULES. | | | | MILCH COWS. | | | |
|---------------------|--|--|---|---|---|--|---|---|--|--|--------------------------------------|--|
| | Total number of horses compared with Feb. ruary, 1869. | Average price per head under 1 year old. | Average price per head between 1 and 2 years old. | Average price per head between 2 and 3 years old. | Total number of mules compared with Feb. ruary, 1869. | Average price per head under 1 year old. | Average price per head between 1 and 2 years old. | Average price per head between 2 and 3 years old. | Total number of milch cows compared with Feb. ruary, 1869. | Average price per head over 3 years old. | Average price per head at this time. | |
| Maine..... | 10.3 | \$35 04 | \$56 71 | \$80 90 | 119 54 | 10.1 | \$45 66 | \$111 25 | 10.7 | \$160 64 | \$39 80 | |
| New Hampshire..... | 10.5 | 32 16 | 54 00 | 60 66 | 100 83 | 10.2 | 49 00 | 132 85 | 10.6 | 165 90 | 43 66 | |
| Vermont..... | 9.8 | 32 33 | 53 50 | 78 16 | 100 00 | 10.1 | 46 45 | 135 92 | 10.7 | 137 50 | 50 33 | |
| Massachusetts..... | 10.1 | 40 37 | 63 28 | 90 00 | 147 50 | 10.6 | 48 33 | 136 66 | 10.7 | 137 00 | 57 00 | |
| Rhode Island..... | 10.1 | 34 66 | 55 66 | 88 00 | 120 00 | 10.1 | 46 25 | 101 00 | 10.3 | 155 00 | 55 00 | |
| Connecticut..... | 10.2 | 41 85 | 66 42 | 98 57 | 141 07 | 10.4 | 45 92 | 133 44 | 10.3 | 160 14 | 60 14 | |
| New York..... | 10.7 | 42 22 | 70 07 | 100 02 | 137 51 | 10.4 | 45 92 | 133 44 | 10.7 | 154 11 | 54 11 | |
| New Jersey..... | 9.9 | 37 31 | 67 53 | 122 00 | 154 66 | 10.2 | 49 00 | 132 85 | 9.9 | 132 85 | 63 93 | |
| Pennsylvania..... | 10.2 | 43 03 | 70 45 | 100 67 | 137 47 | 10.1 | 46 45 | 118 52 | 10.3 | 150 92 | 46 83 | |
| Delaware..... | 10 | 43 33 | 65 00 | 95 00 | 120 33 | 10.6 | 48 33 | 136 66 | 11 | 136 66 | 40 66 | |
| Maryland..... | 10.4 | 39 00 | 59 27 | 86 63 | 122 81 | 10.1 | 46 25 | 101 00 | 10 | 137 50 | 43 18 | |
| Virginia..... | 10.5 | 37 54 | 59 40 | 88 59 | 117 34 | 10.1 | 43 63 | 130 96 | 10.1 | 137 00 | 30 04 | |
| North Carolina..... | 10.2 | 38 73 | 60 34 | 87 50 | 115 66 | 10.4 | 45 92 | 133 44 | 10 | 133 44 | 50 55 | |
| South Carolina..... | 9.8 | 43 05 | 65 00 | 95 44 | 144 25 | 10.4 | 44 88 | 110 00 | 10.6 | 147 00 | 22 63 | |
| Georgia..... | 10.3 | 42 50 | 68 62 | 101 58 | 142 16 | 10.7 | 52 50 | 132 00 | 10 | 161 71 | 48 48 | |
| Florida..... | 10.4 | 48 57 | 74 28 | 126 25 | 163 75 | 9.5 | 50 00 | 130 25 | 10.1 | 154 28 | 16 16 | |
| Alabama..... | 10.8 | 43 50 | 65 45 | 100 41 | 144 61 | 11.2 | 52 72 | 135 38 | 10.2 | 163 46 | 23 46 | |
| Mississippi..... | 11 | 36 92 | 56 78 | 84 14 | 132 71 | 11.6 | 43 33 | 123 84 | 10.9 | 157 73 | 26 34 | |
| Louisiana..... | 12.5 | 33 75 | 46 00 | 76 66 | 123 37 | 10.2 | 37 50 | 106 00 | 10.2 | 147 71 | 30 14 | |
| Texas..... | 10.4 | 13 04 | 21 43 | 26 31 | 42 82 | 10.3 | 22 05 | 49 35 | 9.9 | 125 00 | 10 17 | |
| Arkansas..... | 11.6 | 29 50 | 47 14 | 69 04 | 101 00 | 11.7 | 37 64 | 91 07 | 10.6 | 125 00 | 22 60 | |
| Tennessee..... | 10.7 | 42 21 | 58 61 | 89 63 | 117 38 | 10.2 | 55 38 | 114 81 | 10.6 | 139 74 | 29 07 | |
| West Virginia..... | 10.9 | 34 82 | 52 57 | 77 42 | 102 77 | 10.4 | 42 00 | 90 00 | 10.5 | 119 04 | 33 60 | |
| Kentucky..... | 10.3 | 40 91 | 58 08 | 76 75 | 102 25 | 10.1 | 49 66 | 71 08 | 10.8 | 127 33 | 38 51 | |
| Missouri..... | 11 | 29 25 | 45 14 | 64 79 | 90 82 | 10.2 | 39 46 | 85 01 | 10.1 | 113 71 | 32 32 | |
| Illinois..... | 10.6 | 29 63 | 45 76 | 65 33 | 95 02 | 10.2 | 37 80 | 83 20 | 10.1 | 119 42 | 37 02 | |
| Indiana..... | 10.4 | 31 60 | 59 47 | 74 84 | 97 80 | 10 | 41 55 | 93 84 | 10 | 119 74 | 40 41 | |
| Ohio..... | 10.2 | 31 86 | 54 08 | 78 00 | 106 34 | 9.8 | 40 32 | 91 02 | 10.2 | 118 76 | 44 77 | |
| Michigan..... | 10.5 | 31 33 | 52 87 | 78 13 | 112 37 | 10.5 | 37 92 | 90 92 | 10.8 | 126 37 | 42 94 | |
| Wisconsin..... | 11.7 | 33 32 | 52 64 | 77 67 | 112 14 | 10.5 | 38 00 | 90 66 | 11.2 | 138 94 | 35 78 | |
| Minnesota..... | 11.3 | 39 83 | 65 00 | 94 33 | 127 50 | 10.3 | 39 16 | 115 00 | 11.3 | 136 66 | 36 11 | |
| Iowa..... | 11.3 | 34 15 | 53 32 | 76 72 | 107 33 | 10.5 | 41 40 | 90 78 | 11.2 | 125 65 | 34 91 | |
| Kansas..... | 12.3 | 30 65 | 49 17 | 75 08 | 105 86 | 11.3 | 37 00 | 89 09 | 12.9 | 123 42 | 37 42 | |
| Nebraska..... | 12 | 29 16 | 62 33 | 91 66 | 126 25 | 11.9 | 50 00 | 105 62 | 11.5 | 137 50 | 30 91 | |
| California..... | 10.5 | 12 60 | 21 61 | 34 42 | 54 88 | 10.6 | 20 50 | 37 66 | 11.2 | 86 83 | 47 62 | |
| Oregon..... | 10.4 | 23 55 | 36 00 | 51 66 | 77 77 | 10.1 | 25 00 | 55 00 | 10.1 | 78 75 | 32 00 | |

Table showing the relative proportion, &c.—Continued.

| States. | OXEN AND OTHER CATTLE. | | | | | SHEEP. | | | HOGS. | | |
|---------------------|---|--|---|---|---|---|--|---|--|--|---|
| | Total number of oxen and other cattle compared with that of February, 1869. | Average price per head under 1 year old. | Average price per head between 1 and 2 years old. | Average price per head between 2 and 3 years old. | Average price per head between 3 and 4 years old. | Total number of sheep compared with that of February, 1869. | Average price per head under 1 year old. | Average price per head over 1 year old. | Total number of hogs compared with that of February, 1869. | Average price per head under 1 year old. | Average price per head over 1 year old. |
| Maine..... | 9.8 | \$13.86 | \$24.50 | \$40.54 | \$70.18 | 8.5 | \$2.99 | \$3.16 | 9.8 | \$3.16 | \$26.37 |
| New Hampshire..... | 10.3 | 12.16 | 22.50 | 39.08 | 75.16 | 8.4 | 2.76 | 14.50 | 9.6 | 14.50 | 35.40 |
| Vermont..... | 11.2 | 10.33 | 20.83 | 36.00 | 63.00 | 8.1 | 2.10 | 13.16 | 9.6 | 13.16 | 27.00 |
| Massachusetts..... | 11.4 | 15.75 | 29.88 | 44.11 | 79.22 | 9.5 | 2.10 | 3.68 | 10.1 | 14.55 | 33.77 |
| Rhode Island..... | 10.3 | 15.33 | 25.33 | 41.66 | 76.66 | 10 | 3.33 | 4.66 | 8.6 | 12.33 | 25.66 |
| Connecticut..... | 9.6 | 17.42 | 28.71 | 44.57 | 87.14 | 8.8 | 3.35 | 4.78 | 9.7 | 14.98 | 27.78 |
| New York..... | 10.3 | 12.40 | 24.70 | 44.50 | 71.72 | 9.8 | 2.99 | 3.20 | 10 | 10.25 | 20.80 |
| New Jersey..... | 9.6 | 16.86 | 30.50 | 43.86 | 69.42 | 9.3 | 3.82 | 4.61 | 9.1 | 12.86 | 25.71 |
| Pennsylvania..... | 9.6 | 12.00 | 23.00 | 38.25 | 55.00 | 9.5 | 2.13 | 3.11 | 9.7 | 3.76 | 21.17 |
| Delaware..... | 10.6 | 10.66 | 19.00 | 28.33 | 43.33 | 10 | 3.80 | 4.66 | 10.6 | 8.00 | 12.50 |
| Maryland..... | 10.2 | 17.77 | 20.18 | 30.00 | 44.36 | 9.8 | 3.19 | 4.39 | 9.8 | 6.72 | 15.07 |
| Virginia..... | 10.1 | 7.60 | 14.21 | 23.03 | 33.34 | 9.4 | 2.00 | 2.78 | 9.8 | 4.20 | 9.10 |
| North Carolina..... | 9.8 | 4.45 | 7.73 | 12.34 | 18.16 | 9.3 | 1.18 | 1.82 | 9.8 | 3.50 | 8.35 |
| South Carolina..... | 10.1 | 4.27 | 7.75 | 13.09 | 19.18 | 9 | 1.19 | 1.92 | 10.4 | 3.50 | 6.57 |
| Georgia..... | 9.8 | 4.16 | 7.71 | 12.45 | 19.00 | 8.9 | 1.24 | 1.83 | 9.8 | 2.67 | 6.46 |
| Florida..... | 10.4 | 3.83 | 5.45 | 8.00 | 13.83 | 8.2 | 1.25 | 2.25 | 10.1 | 2.33 | 5.50 |
| Alabama..... | 10 | 4.73 | 8.19 | 15.92 | 23.46 | 9.9 | 1.02 | 1.79 | 9.7 | 4.25 | 8.87 |
| Mississippi..... | 10.4 | 4.71 | 7.00 | 12.50 | 23.72 | 9.3 | 1.26 | 1.94 | 9.8 | 3.51 | 9.55 |
| Louisiana..... | 9.7 | 5.40 | 7.66 | 11.50 | 16.42 | 9.5 | 1.25 | 2.25 | 10 | 1.85 | 6.64 |
| Texas..... | 9.9 | 2.18 | 3.45 | 5.38 | 9.85 | 10 | 1.13 | 1.90 | 9.6 | 2.10 | 4.39 |
| Arkansas..... | 10.2 | 4.50 | 7.93 | 12.46 | 17.83 | 10.9 | 1.39 | 2.96 | 10.8 | 4.04 | 9.17 |
| Tennessee..... | 10.3 | 5.98 | 10.51 | 17.37 | 26.84 | 9.8 | 1.41 | 1.96 | 10.1 | 3.63 | 8.36 |
| West Virginia..... | 9.98 | 18.57 | 29.92 | 42.10 | 61.00 | 9.6 | 1.34 | 2.08 | 9.9 | 3.83 | 9.58 |
| Kentucky..... | 9.8 | 10.80 | 18.75 | 30.85 | 46.03 | 9.7 | 2.02 | 3.00 | 10.2 | 4.26 | 10.88 |
| Missouri..... | 10.9 | 8.04 | 14.50 | 24.38 | 37.66 | 10.6 | 1.22 | 1.87 | 11.2 | 3.53 | 8.60 |
| Illinois..... | 9.9 | 9.76 | 17.14 | 27.18 | 41.54 | 9.4 | 1.23 | 1.80 | 9.6 | 6.32 | 13.65 |
| Indiana..... | 9.7 | 9.79 | 19.40 | 31.73 | 46.35 | 9.5 | 1.23 | 1.83 | 9.3 | 5.09 | 12.37 |
| Ohio..... | 9.9 | 11.66 | 21.33 | 34.62 | 52.37 | 9.5 | 1.37 | 2.19 | 9.8 | 5.09 | 16.76 |
| Michigan..... | 10.3 | 9.40 | 18.33 | 31.60 | 53.31 | 8.4 | 1.38 | 2.12 | 9.9 | 5.27 | 12.97 |
| Wisconsin..... | 10.5 | 8.50 | 14.52 | 24.50 | 42.28 | 9.6 | 1.62 | 2.30 | 10.3 | 6.41 | 14.35 |
| Minnesota..... | 10.8 | 11.06 | 19.68 | 27.81 | 47.06 | 10 | 1.10 | 2.63 | 10.7 | 5.78 | 12.13 |
| Iowa..... | 10.9 | 9.25 | 16.65 | 27.98 | 43.96 | 9 | 1.13 | 1.72 | 10.2 | 6.47 | 14.90 |
| Kansas..... | 13.5 | 9.86 | 16.86 | 28.78 | 46.60 | 11 | 1.45 | 2.34 | 12.1 | 5.16 | 12.73 |
| Nebraska..... | 11.4 | 9.45 | 17.58 | 32.50 | 45.85 | 10.5 | 1.87 | 2.72 | 10.6 | 6.11 | 13.90 |
| California..... | 9.7 | 10.93 | 18.68 | 29.06 | 41.87 | 11.1 | 1.81 | 2.81 | 10.7 | 3.57 | 7.20 |
| Oregon..... | 9.9 | 10.60 | 17.30 | 24.15 | 32.92 | 9.6 | 1.30 | 1.95 | 10.9 | 2.00 | 4.61 |

EXTRACTS FROM CORRESPONDENCE.

EXPERIMENTS WITH SEEDS.

Lincoln County, N. Y.—The Tappahannock wheat sent out in 1868 is a success in this locality. It made, last season, 28 bushels to 1 sown.

Harrison County, Ind.—The Tappahannock wheat has proved a very valuable variety. The first package was received from the department, October 6, 1864, and was sown October 10. The yield was very gratifying, both in quality and quantity. Since that time I have sown it every year with the same result. It ripens about two weeks earlier than the Mediterranean, the principal variety raised in this section. It has proved a most admirable kind for flour, our millers preferring it to all others, one miller saying that he will give, next year, 30 cents per bushel more for Tappahannock than for other varieties. A great many of my neighbors have obtained the seed from me, and in every instance it has given the greatest satisfaction. On account of its thick short stem it appears to be peculiarly adapted to bottom land, or to rich soil where the ordinary varieties are apt to lodge.

Vanderburg County, Ind.—About 10 pounds of Tappahannock wheat received from the department was sown in the early part of November, 1868, (when it was really too late,) on rich upland, southwest exposure. I harvested in June, 1869, (by measure) 5 bushels and 5 pounds of beautiful large-grained, white, sound, wheat. The seed was sown again in September, 1869, on other good soil, and the result will be reported. That sown in November, 1868, was partially winter-killed—probably $\frac{1}{4}$ or $\frac{1}{3}$ of it—and yet the yield was as above.

Cherokee County, Kansas.—I have the honor to make the following report of seeds issued by your department. One quart of Excelsior oats were sown May 7, forty days later than the remainder of my oat crop. They were put into a well prepared bed by drilling them eight inches apart with a Harrington garden drill. They grew wonderfully rank with heavy straw and leaves, but the rust struck them, and to finish it a very hard storm beat them down nearly flat, and I was compelled to cut them long before they were ripe. They were cut at the same time I cut the main crop, planted forty days earlier. In spite of all the calamities the Excelsior oats yielded the best. I got from the one quart sixteen quarts of good oats, though rather lighter than the original seed.

The Student parsnip grew large and well. It is an acquisition. The three varieties of tomatoes, Cook's Favorite, Cedar Hill, and Maupay, I planted with eight other varieties, purchased from dealers. They are all good varieties. The choice of the eleven is between the Cedar Hill and Maupay; both are excellent. The Winter Savoy Drum-head cabbage was the finest lot of cabbage seed I ever saw. They were planted April 29, set out June 28; raised four hundred heads. It is a magnificent cabbage, and I like it much better than the Marblehead Mammoth.

I planted, April 29, the following onion seed: White Lisbon, Red Wethersfield, Yellow Danvers, Madeira, and Yellow Dutch, expecting only to get sets, but to my surprise they began to bottom down, and, as I thinned them out they made large onions. I could not see any difference between the Yellow Dutch and Danvers. The White Lisbon is a very nice onion; the Wethersfield grew the largest, three and one-fourth inches in diameter. The Madeira is new, and succeeds well, though I cannot tell yet whether it will keep well or not. The Dwarf Blood beet does not amount to much. They had the best attention, and did poorly.

For the Purple Kohl Rabi I made an extra rich bed, near the stable, intending to transplant, but the plants were all eaten up as fast as they appeared. (Moral: Do not make open hot-beds near stables, because worms, bugs, beetles, and flies there do most congregate in early spring.)

The seeds from the department have been remarkably pure, more so than any I ever purchased, and are almost all fine varieties and valuable acquisitions.

Nicolet County Minn.—I have tried the English vetches, but they were a total failure. I also tried the mangel-wurzel as a substitute for corn for hogs and cattle; the trial was satisfactory, and I think one acre will fatten more hogs than two acres of corn, and with the same amount of labor. They should be planted in rows three feet apart so as to be attended with a small plow or cultivator. If too thick when four inches high they should be thinned to six inches; they are well suited to a cold climate. Many of my neighbors intend trying them next season.

The wheat received from the department last season was more than an average crop; the oats and barley did not get a fair trial, but I think next year they may do better. I will send you a sample of the wine rhubarb seed. The plants were imported five years ago from Lord Cremorne, county Monaghan, Ireland. It cannot be too highly recommended where fruit is scarce. It is said to be superior to any variety ever seen in this part of the country. The seed should be sown in drills as early as the ground will permit, covered about one inch, and the following spring transplanted five feet apart each way, as the leaves grow very large. They should be planted on rich soil, with plenty of rotted stable manure. They will be fit for use the second season after sowing.

HOG-CHOLERA.

Hickman, Kentucky.—Judging from post mortem examinations, I am satisfied that hog cholera results from diseased liver or worms in the intestines. I killed a shoat some time since, and its liver was twice as large as it ought to have been, and full of boils. I killed a hog the other day, and its small intestines were covered with small pimples, very hard; I opened the gut and it was full of flat white worms which appeared to be dead, their heads sticking fast in the gut and making these pimples on the outside.

I am inclined to think that if a remedy can be found that will expel these worms, we will find a cure for hog cholera. The liver of the hog above named was perfectly sound. He was one of my pork hogs, and had been eating salt and ashes twice a week for two months, which had kept his bowels open, and prevented the worms from blocking up the canal and producing constipation, which is really what we call hog cholera, for if a hog purges he almost certainly gets well. Curing a sick hog is all stuff; I believe nine times out of ten the hogs cured would have got well anyhow. I believe in preventives. As soon as your pigs can "crack corn" cover the pen with ashes and sprinkle salt on it and shell the corn to them. Move your hogs as often as you can conveniently, and never feed long or let them sleep for a long time in the same place. In this latitude never suffer a hog to go under shelter; further north it may be necessary. Dust is the worst thing in the world for a hog; straw the next. If a hog should be taken sick move the well ones away from him and kill him, or leave him where he is. Green apples and red clover are also a good preventive. I have never had the hog cholera on my place but once, and scarcely ever have a pig or hog to die.

In the last two years my sows have had one hundred pigs, and I have

lost three pigs and two hogs, and yet have been surrounded by hog cholera each year. Hogs should not be fed in the morning in the spring and early fall; they will eat and bed up together when the mornings are cool, and of course at night. Being thus bedded up together nearly all the time will produce disease of itself. If not fed they will stir out to hunt something to eat. Give them a good feed at night and they will lie down and digest it well. The largest hog-grower in this county follows these rules and is never troubled with hog cholera.

LARGE YIELD OF OATS.

A correspondent sends the statement of J. T. Merriam, of Geauga County, Ohio, accompanied with an affidavit to the verity of the facts, showing a yield of twenty pounds of oats raised from the product of five heads sown on one rod and thirty and one-half feet of land, giving a yield of ninety bushels to the acre.

Mr. Merriam states in his affidavit that these oats were of a variety unknown to him, and that they grew from twelve to eighteen inches higher than the oats of another variety in the same field, and that some of the heads measured from twenty to twenty-three inches in length, producing from two hundred and fifty to three hundred and twenty kernels of grain to each head.

In another statement, Mr. Merriam says that he raised from one bag of oats, (containing less than one quart,) received from the Department of Agriculture, and sown on three rods and twenty-six and one-half feet of land, forty-nine and one-half pounds, giving a product at the rate of eighty bushels to the acre.

FLORIDA PRODUCTS.

A correspondent in New Smyrna, Volusia County, Florida, urges the Commissioner of Agriculture to supply, by aid of government vessels or otherwise, new varieties of cane, oranges, bananas, and figs, for propagation in that latitude. The want of such facilities for extending the culture of tropical fruits is greatly deplored, and government aid is earnestly sought. He refers to the following as the peculiar products of this region:

Prominent among these are sugar cane, oranges, lemons, limes, figs, guavas, and, in this section, bananas. There are some facts concerning several of these that may be new to you, and which form the basis of the suggestion mentioned above.

SUGAR CANE.—It is the general opinion of sugar planters that, owing to the prevailing custom of planting tops and inferior cane, as well as to hybridizing of the various kinds raised, our cane is very much degenerated.

ORANGES.—There is but one variety accessible to the mass of the people, and this, in some parts of the State, is becoming so much infested with the scale insect as to make it necessary to cut down and burn up the trees. A grove of fifteen hundred trees within twelve miles of here is now undergoing this severe remedy, and probably not a tree will be left standing. St. John's River was visited by the same destruction several years since, and may be again at any time. No grove in this county is free from the insect, so far as I am acquainted.

BANANAS.—This fruit is hardy here in ordinary seasons, and productive, but out of the great variety that exists in other countries there are

but two to be obtained here, and very few of these. One can get only two or three plants and wait for their increase.

FIGS.—These grow almost spontaneously, and are wonderfully productive, but there are few varieties here.

Bananas fruit in three years from the offshoot, oranges in three years from the bud, and figs three years from the cutting.

AVERAGE YIELD OF MILK.

Linus D. Sheldon, of Vernon, Ohio, writes as follows: My favorite cow Star was ten years old last spring. She is a cross between the Holderness and the Durham. She calved Christmas eve, 1868, and I commenced weighing her milk on New Year's morning following. Her weight was then 1,590 pounds, and at the close of the year 1,580 pounds. The yield per month during the year was as follows:

| | Lbs. | Oz. |
|----------------|--------|-----|
| January..... | 1,147 | 12 |
| February..... | 1,038 | 14 |
| March..... | 1,079 | 12 |
| April..... | 1,001 | 8 |
| May..... | 1,148 | 12 |
| June..... | 1,152 | 8 |
| July..... | 1,037 | .. |
| August..... | 881 | .. |
| September..... | 900 | .. |
| October..... | 887 | .. |
| November..... | 575 | .. |
| December..... | 339 | .. |
| Total..... | 11,118 | 2 |

The largest daily yield during the year was forty pounds; the last day she gave only nine pounds—within eight weeks of calving. In a previous year she gave during the month of June 1,207 $\frac{3}{4}$ pounds. She will come in the first of March next.

BEET SUGAR.

Foreign statistics represent the consumption of sugar of all kinds, in the last nine months of the year 1869, in France, to amount to 295,000 tons, against 253,000 tons in the same period of 1868, in the following proportions:

| | 1869. | 1868. |
|---------------|---------|---------|
| | Tons. | Tons. |
| Beet..... | 137,000 | 129,000 |
| Colonial..... | 67,000 | 49,000 |
| Foreign..... | 90,000 | 74,000 |

The exportation of refined sugar for the same period in 1869 was

71,000 tons, against 57,000 tons in 1868, showing an increase of 15,000 tons; and the import from the colonies and foreign countries:

| | 1869. | 1868. |
|----------------------|--------------|--------------|
| | <i>Tons.</i> | <i>Tons.</i> |
| Colonial..... | 66,000 | 80,000 |
| Other countries..... | 93,000 | 90,000 |

The stocks of beet and cane on the 25th of December were:

| | 1869. | 1868. | 1867. |
|-----------|--------------|--------------|--------------|
| | <i>Tons.</i> | <i>Tons.</i> | <i>Tons.</i> |
| Beet..... | 44,000 | 42,720 | 34,000 |
| Cane..... | 9,110 | 15,115 | 2,800 |

Thus nearly one-half the sugar consumed in France is made of beets. The quality of this season's manufacture is unusually good, and the beet has yielded an increased percentage of sugar, the improvement in some cases reaching two per cent. Not less than 40,000 tons have been made in crystals and fine sugar above number twenty, Dutch standard, against 24,000 tons last year. It is estimated that 200,000 tons have already been manufactured, and the entire product of the season will be 250,000. The price at the close of the year was 61 francs for 88 per cent., or 5s. 6d. There will be less than usual of the brown graining sorts this season.

THE EUROPEAN YIELD.

A review of the beet sugar industry in Europe appears to indicate an increase of 100,000 in the annual production, which is placed at 725,000 tons, against 625,000 tons last year. A million tons will, ere many years, in all probability, be reached. The product already exceeds that of Cuban cane sugar.

The number of manufactories reported are as follows: In France, 475; Belgium, 120; the Zollverein, 297; Austria, 200. There are also thousands of spirit distilleries and alkali works, collateral branches of this industry. The consumption of beet sugar is extending on the continent and in Great Britain, where the industry as yet scarcely has a foothold. One manufactory and one distillery are in operation in England. The prejudice of English refineries against it is rapidly giving away.

BET SUGAR IN WISCONSIN.

In pursuance of a call made by a committee of the Board of Trade of Fond du Lac, Wisconsin, a meeting of residents of that city and vicinity was held February 22, 1870, Mayor Nichols in the chair, to take into consideration the establishment of a beet sugar manufactory. Addresses were made by various gentlemen in reference to the success of the manufacture in Europe, and urging its introduction at Fond du Lac, not only as a matter of pecuniary profit, but also as a public benefit in giving employment to a large amount of labor, including that of women and children. Mr. Trowbridge, of the Novelty Works, offered to furnish machinery and take pay in stock, and another gentleman offered the use

of two hundred acres of land at a rental of three dollars per acre, payment to be made in stock. Mr. Wiferling, superintendent of the works at Chatsworth, Illinois, gave the following statement, based on experience at Chatsworth, of the daily cost of running a factory capable of using fifty tons of beets per day :

| | |
|---|----------|
| Beets, fifty tons..... | \$200 00 |
| Coal, twenty tons..... | 80 00 |
| Labor of one hundred hands..... | 100 00 |
| Grease, tallow, &c..... | 4 00 |
| Lights..... | 2 00 |
| Shovels, brooms, &c..... | 1 55 |
| Lime..... | 8 00 |
| Acids, &c..... | 9 00 |
| Loss on bone-black, 250 pounds..... | 10 00 |
| Belting..... | 2 00 |
| Filtering-cloths..... | 3 00 |
| Rubber, lead, hemp, &c., for packing..... | 1 25 |
| Changing, repairing, &c..... | 10 00 |
| Stationery, &c., in office..... | 2 00 |
| Coke..... | 1 00 |
| Sinking fund for wear, &c..... | 66 60 |
| Interest on capital..... | 66 60 |
| Salaries..... | 20 00 |
| Insurance..... | 20 00 |
| Barrels..... | 20 00 |
| Incidentals..... | 25 00 |
| | <hr/> |
| | 652 00 |

Fifty tons of beets will yield at least ten per cent. of boiled juice and the product will be as follows :

| | |
|--|----------|
| Coffee-sugar (A,) 4,000 pounds, at 15 cents..... | \$600 00 |
| Coffee-sugar (C,) 1,000 pounds, at 13 cents..... | 130 00 |
| Yellow sugar, 500 pounds, at 11 cents..... | 55 00 |
| Molasses, 3,000 pounds, at 2 cents..... | 60 00 |
| Pulp for feeding..... | 15 00 |
| | <hr/> |
| Total income..... | 860 00 |
| Expenses..... | 652 00 |
| | <hr/> |
| Net profit daily..... | 208 00 |

Mr. Wiferling stated that tests had proved the soil at Fond du Lac to be free from the salts, &c., which have prevented the granulation of sugar at other points.

At a subsequent meeting, S. D. Carpenter gave the following estimate of the cost of establishing a factory capable of working up seventy-five tons, or one hundred and fifty thousand pounds of beets every twenty-four hours :

| | |
|--|------------|
| Building..... | \$5,000 00 |
| Pulping and power department..... | 6,100 00 |
| Scum department..... | 400 00 |
| Defecation department..... | 1,100 00 |
| Carbonation department..... | 2,425 00 |
| Evaporation department..... | 9,300 00 |
| Filtration department..... | 2,725 00 |
| Bone-black department..... | 1,000 00 |
| Crystallization department..... | 3,725 00 |
| Piping, vats, tools, &c..... | 3,400 00 |
| | <hr/> |
| Total cost of factory..... | 35,175 00 |
| Add for 30,000 pounds of bone-black..... | 1,500 00 |
| | <hr/> |
| Total..... | 36,675 00 |

Mr. Carpenter estimated the annual expenses, including ten per cent. interest on outlay, at \$18,967 50, to which he added twenty per cent. for insurance and incidentals, making a total of \$58,761. He also gave the following as a fair estimate of the probable yearly income :

| | |
|--|-------------------|
| Sugar, 1,200,000 pounds, at 12 cents..... | \$144,000 00 |
| Pulp for feeding cattle, 2,700,000 pounds..... | 2,700 00 |
| Molasses, 5,000 gallons, at 35 cents..... | 1,750 00 |
| Residues as fertilizers..... | 1,000 00 |
| Total..... | 149,450 00 |

A committee made a report on the history of the manufacture of beet sugar in Europe, containing the following exhibit of progress in France : In 1825 France produced 5,000 tons of sugar from 100 factories; in 1836 she had 436 factories.

Comparative results of 1837 and 1865.

| | 1837. | 1865. |
|-------------------------------|----------------|---------------|
| Yield of beets per acre..... | 12 tons. | 16 tons. |
| Cost per ton..... | \$3. | \$3 25. |
| Percentage of saccharine..... | 10 per cent. | 11½ per cent. |
| Sugar produced..... | 42.5 per cent. | 7 per cent. |
| Cost per pound..... | 7 3-10 cents. | 4 cents. |
| Amount of sugar produced..... | 49,000 tons. | 270,000 tons. |

A NEW HAMPSHIRE FARM.

The farm of J. B. Walker, of Concord, New Hampshire, comprises three hundred acres; arable land, permanent pasture, and wood-land. The tillage land includes one hundred and ten acres of intervale, situated within three-fourths of a mile of the State-house, most of it nearly level, and particularly free from obstructions to the plow; also, twenty-five acres of low meadow land, improved by drainage. Each year he plants about six acres, well manured, in corn, the yield averaging for a course of years fifty to sixty bushels per acre, worth \$1 25 to \$1 50 per bushel. The presence of twitch-grass roots has required a heavy expense in cultivating this corn crop, compelling him to go over the field three times with cultivator and hand hoe. His statement of account with his corn crop of 1865 shows a cost in cultivation of \$50 per acre; yet, even with this outlay, he secured a net profit of \$33 94 per acre for the season, with the further promise of still greater profit in succeeding crops. After harvesting the corn, the stubble ground is plowed, harrowed, and sown with timothy and redtop; and for several years he averages on this corn land two to three tons of excellent hay, with a large second growth.

It has not been his practice of late years to follow corn with oats or other grain, as such a course produces rank growth and lodging of the grain, and leads to expensive and comparatively unprofitable harvesting. He grows about six acres of oats—mostly on inverted sod—averaging fifty bushels per acre, worth seventy-five cents per bushel, at an average of several years. Notwithstanding he is amply supplied with improved farm machinery, the oats are cradled and threshed by hand, as the straw, thus maintained in its best condition, is sold for filling beds, &c., finding a ready market at \$14 per ton. In the autumn the stubble is turned under, the land manured and sown to grass.

Hay being the most profitable crop for his region and individual lo-

cality, he farms principally for that crop, generally mowing his grass lands six years in succession, obtaining at least two tons per acre, annually, throughout this entire period. He crops about one hundred and forty tons of hay—one hundred and ten tons of English hay, the rest meadow hay of varying quality—and sells from sixty tons to seventy-five tons annually, the price averaging for the last five years \$20 to \$25 per ton. The remainder of the hay he feeds to his farm stock. This stock consists of four large Devon oxen, eight cows, and young stock of different sexes and ages, making a total of twenty-five head, besides two large horses. His cows and young stock are chiefly full-blooded Durhams. The manure from his stock, with the addition of about \$200 worth of stable manure, purchased annually, enables him steadily to increase the fertility of his farm, which has been under cultivation for one hundred and forty years, having been for the entire period owned by his family in the persons of himself and three generations of his ancestors.

Besides the arable lands already mentioned, the farm contains forty acres of pasture, and one hundred acres of timber and wood land. In cutting his timber and fire-wood he cuts clean as he goes, leaving the land to an entirely new growth of forest. He has recently sold the growth on twenty-nine acres at the following prices: Timber squaring six inches and over, \$10 per thousand feet, board measure; under six inches, \$6 per thousand; tops, limbs, and defective trees not suitable for timber, \$1 per cord. The purchasers take the lot standing, and are to clear it off within a stated time. Careful estimates put the timber at twenty thousand feet per acre, and the fire-wood at fifteen to twenty cords per acre.

The foregoing statement is condensed from data furnished to the department by Mr. Levi Bartlett, of Warner, New Hampshire, who remarks that Mr. Walker has expended more money in draining than any other farmer of his acquaintance in the State.

TAX ON FARMERS AS PRODUCE BROKERS.

The municipal regulations of cities often bear with severity upon the producers of meats, fruits, and vegetables, and by unnecessary taxation and restriction tend to increase the number of hucksters and intermediate tradesmen, and to enhance the prices of produce to consumers, while the farmers are subject to the rapacity of these organized bands of middle-men, who are generally aided and protected by city authorities.

The wrongful construction of the revenue law, taxing farmers as produce brokers, when they only sell their own produce, has drawn large sums of money from the pockets of farmers contrary to the evident intention of the framers of the law and to the spirit of our revenue system. Hon. Henry A. Reeves, a member of the Committee on Agriculture of the House of Representatives, apprised of the fact that three hundred farmers of Queens County, New York, (in his district,) had been compelled wrongfully to pay this tax, introduced the following resolution into the House of Representatives:

Whereas the Acting Commissioner of Internal Revenue has construed the act of June 30, 1864, as amended by act of July 13, 1865, to authorize and to require the imposition of the special tax paid by produce brokers upon farmers and market-gardeners, who sell the produce of their own farms or gardens from stalls or stands, thereby levying a direct tax upon the production of the prime necessities of life: Therefore,

Be it resolved, That the Committee of Ways and Means be directed to inquire into the expediency of reporting, at the earliest practicable moment, a joint resolution declaratory of the true intent and meaning of the said act in the particular above referred to or if, in their judgment, such a course be deemed necessary or desirable, then to report a bill amending the act in question, so as to remove the grounds for the interpretation put upon the act by the Acting Commissioner.

WHAT IS RAMIE?

The following letter from that eminent botanical authority, Joseph D. Hooker, of the famous Kew Gardens, England, who has examined the China grass fibers of the East under their various synonyms, corroborating our repeated statements that there is no essential difference between the specimens from different localities bearing local names. It shows that "ramie" is identical with the Chinese fiber, and that the proper name is *Bœhmeria nivea*, while *B. tenacissima* is the same as *B. Candicans*, (which has also been distributed by this department,) and that this is only a sub-variety of *B. nivea*, and not essentially different. Besides, specimens from the South, Europe, and elsewhere have been grown together in the experimental gardens, and no difference has as yet been discovered:

DEAR SIR: I have to acknowledge, with very many thanks, the parcel with ninety-five species of seeds, collected by Ravenel, together with certain living plants, which arrived in admirable order, and are very valuable additions to our stock.

I have been making inquiries about the grass-cloth nettle, which is widely cultivated from India, through the Archipelago, to China. It is the *Bœhmeria nivea*, Hook. and Arn.

B. Tenacissima, Gand. (*Urtica tenacissima*, R X 6) is a mere concolorous variety of the same, (*B. nivea* *B. Candicans*, Wedd.) Chuma (or tchouma) and ramie, or caloi and "China grass," are all the same. It is also the "Dom Rhee" of Major Hanna's fibers, (fide spec. in Hv.)

I send herewith directions with regard to its cultivation, which may be useful to you, together with some seeds of the *Chryptomeria Japonica*, just received from India, and another set of the Cinchonas, from Dr. Anderson.

Very faithfully, yours,

JOS. D. HOOKER.

The laborious mode of preparation of the fiber practiced in China, as communicated by Dr. D. J. Macgowan to the Journal of the Agri-Horticultural Society of India, is as follows:

PLANTING THE SEEDS.—In China this takes place in May. Great care is first taken in the selection of seeds and in the preparation of the soil. The seed should be gathered on the appearance of frost; those produced from a recent root. After being dried, they are stowed away in a basket or jar, mixed with sand or dry earth—others say, moist earth. The jar is then covered with straw to protect the seeds from the cold, as, if exposed to its influence, they yield an imperfect plant. Before planting, the seeds are tested by immersion in water; those which float are to be rejected; those at the bottom, planted. A loose, dry soil is to be selected; if near a canal or river, it is preferable. The ground is to be well plowed, or broken finely, manured, and then divided into beds about eight yards long and one wide; the beds are to be raked, and afterward made compact with a hoe. After this, it is watered, and left for a night. On the following day raking up and pressing down is repeated. The beds being smooth, two or three tablespoonfuls of seed are mixed with a bowl of earth, and sown broadcast over half a dozen beds; then they are swept with a broom to cover the seeds. In some places the seeds are first made to sprout, and then planted in drills, which are carefully filled up. Just before the blades appear, a framework is to be constructed over the beds, on which mats should be spread to protect them from the heat of June and July. The matting must be kept moist by day, and removed at night that the blades may receive the dew of heaven. The beds are to be constantly weeded. When the plant is about two inches high, the framework and matting may be removed. When three inches high, it should be transplanted, having been well watered the night before; the blades should be taken up separately, with a portion of

earth, and planted in a field, far removed from mulberry trees, about four inches apart. It may form a border to the cerealia and vegetables, protecting them from the depredations of domestic animals, which all avoid the "ma." In dry weather, the field is to be watered every three or four days until the second decade, when it may be watered every tenth day.

In November and December manure it with horse or buffalo dung, earth, straw, or any rubbish, a foot or more thick to protect it from the cold. In March rake it away and expose the plant, watering it in dry weather, and using rubbish of any kind for manure. A caution is given never to use swines' dung, as it is "saltish" and hurtful to the "ma." In the third or fourth year, some say the second, the plant may be cut and used.

PLANTING THE ROOTS.—The roots are to be cut in pieces of three or four fingers' length, and are to be planted in May, half a yard apart, and watered every three or four days. On the appearance of the blades, use the hoe, and water them; they will be mature for cutting in the second year. In the course of ten years the roots become unfruitful; the shoots may then be cut off, and, if enveloped in earth and covered with matting, can be transplanted in places thirty or forty inches distant. The ground should be first well prepared with manure, and freely manured afterward, the manure being half water. Here, as before, the plants should be hoed from time to time. In many cases fresh earth, pulverized bricks, ashes, &c., are used for manure. Some years the husbandman has his crop injured by worms; he needs, therefore, to seek for and destroy them as they appear by picking them off. It not unfrequently happens that the crop is in some places remarkably small, and sometimes the produce is very great without assignable cause.

CUTTING.—It yields three crops every year. The first cutting takes place in June. Care is to be taken not to cut the young shoots; keep, therefore, an inch from the ground. In a month or two the shoots are seven or eight feet high, when the second cutting takes place; do not cut the original stem. During the latter part of September, or in October, the last cutting is performed, from which the finest cloth is made, the first being inferior, coarse and hard. After each cutting, the plant is to be covered with manure and watered, but not day by day, unless it be cloudy. At Canton, the plant is pulled up by the roots every year, from which it is evident that it differs widely from the "ma" just described.

PEELING.—On being cut, the leaves are carefully taken off with a bamboo knife, by women and children, generally on the spot. It is then taken to the house, and soaked in water for an hour, unless it is already wet by recent showers; in cold weather the water should be tepid. After this the plant is broken in the middle, by which the fibrous portion is loosened, and raised from the stalk; into the interstice thus made the operator, generally a woman or child, thrusts the finger nails and separates the fiber from the center to one extremity, and then to the other. The stripping process is very easy. It appears to be difficult to remove the fibers from the Canton "ma," as it is soaked in water for more than forty-eight hours before peeling, which is done by men. They first cut off the roots, and then, separating the fiber from the stock, strip it off by drawing it over a pin fixed in a plank. In either process half of the fiber is taken off at one stroke. The next process is scraping the hemp, to facilitate which the fiber is first soaked in water. The knife or scraper is about two inches long; its back is inserted in a handle of twice its length. This rude implement is held in the left hand; its edge, which is dull, is raised a line above the index finger. Strips of hemp are then drawn over the blade from within outward, and being pressed upon by the thumb, the pilous portion of one surface and the mucilaginous part of the other are thus taken off. The hemp then "rolls up like boiled tendon." After being wiped dry, it is exposed to the sun for a day, and then assorted, the whitest being selected for the finest cloth.

BLEACHING AND DIVIDING.—A partial bleaching is effected on the fibers before they undergo further division, sometimes by boiling and at others by pounding on a plank with a mallet. These are in some places repeated. After being dried in the sun, an important operation then succeeds by women and children, to whom is intrusted the tedious process of splitting the fibers, which they do with their finger nails. Expert hands are able to carry this division very far. When this process is preceded by hacking, the shreds are finer and softer. The threads are formed into balls, and subject to frequent soaking and washing. The ashes of the mulberry leaf are recommended to be put into the water with the hemp; others use lime for a whole night. Some simply expose it to dew and sun. In rainy and cloudy weather it should be exposed to a current of air in the house; moisture darkens it. The threads are now ready for splicing, the work of the women and children, the labors of the agriculturist being concluded, when the threads are rolled into balls, after being sized or stiffened with rice water. Before the thread is ready for the weaver, the balls are steamed over the vapor of boiling water in a closed oven. They are then spread out to dry. The subsequent stages, until the cloth is removed from the loom, include nothing which interests, or at least instructs artisans in the West.

Major F. S. Hannah, in the Journal of the Agri-Horticultural Society of India, describes the India mode as follows:

CUTTING AND REMOVING THE FIBER FROM THE STALKS.—The stalks are considered fit for cutting when they have become of a brown color for about six inches above the roots. To cut them the laborer seizes the leaves at the upper end with his left hand, and passing the right hand down the root, strips off the leaves and cuts the stalk close to the ground. The stalks are made up into bundles, and the scraping off the outer bark commences at the same time, or this operation is deferred until the whole crop of the plat has been cut. The scraping off of the fiber from each stalk is a very tedious operation, and is performed with a blunt-edged knife; all that is left is the fiber and woody part of the stalk, which is exposed to a hot sun for two or three days to dry. The third morning, after having been exposed to the dew for several hours, the fiber is drawn off. This is done by breaking the woody stalk right through toward the thicker end, and then separating the fiber therefrom, drawing it off slowly toward the small end, some care being required in giving the same a peculiar twist so as to draw off as much as possible. Having finished with the smaller end, what remains on the thicker end of stalk is pulled off in the same manner. It will be seen that this is a very clumsy way of extracting the fiber, and, as far as I can judge, one-fifth of the fiber still remains in the stalk, which may be taken off, however, at the second breaking, but the workers are not particular, so long as they get what they require. The hanks of the fiber are then separately twisted at the upper end and tied up in bundles of long hanks of about one seer in weight, if kept for sale. As the fiber, however, thus extracted, is quite ready for the purpose of net-making, little or nothing more is done than to open out and prepare the threads for spinning, which is done first by drawing the single hanks several times with a blunt-edged slip of bamboo, held in the right hand. This softens and strengthens the fibers, and they are more easily cut to the required fineness with the fingers and thumb nails, and then made up into small hanks ready for the spinning process, the first stage of which is performed by the women with the common *takro* or spindle, in general use throughout India, the hanks having been well opened out and spread over the top of a high, circular, open bamboo frame, set end-ways on the ground. The further operation of spinning the first threads to the requisite thickness, and the weaving of the nets, is performed by the men.

A MACHINE WANTED.

Repeated indorsements of the value of this fiber have been made by this department; and the urgent necessity for calling in the aid of mechanical invention has been set forth as the only means of arresting practical failure in its extended culture. For this animadversions have been freely meted out by parties interested only in propagation for purposes of speculation; but the same difficulty has met the British government in India, and the governor general has made the following announcement, and the consul general at Calcutta, Nathaniel P. Jacobs, in forwarding it, says: "The prize of £5,000 may possibly stimulate the inventive faculties of some American mechanical genius in competition."

1. The government of India, after communications with various agricultural and horticultural societies in India, and with persons interested in the subject, has arrived at the conclusion that the only real obstacle to the development of an extensive trade in the fiber of *rheea*, or China grass, is the want of suitable machinery for separating the fiber and bark from the stem and the fiber from the bark, the cost of effecting such separation by manual labor being great.

2. The demand for the fiber is now large, and no doubt might be extended with reduced prices; and there is a practically unlimited extent of country in India where the plant could be grown.

3. The requirements of the case appear to be some machinery or process capable of producing, with the aid of animal, water, or steam power, a ton of fiber of a quality which shall average in value not less than £50 per ton in the English market, at a total cost, all processes of manufacture and allowance for wear and tear included, of not more than £15 per ton. The said processes are to be understood to include all the operations performed, after the cutting and transport of the plant to the place of manufacture, to the completion of the manufacture of fiber of the quality above described. The machinery must be simple, strong, durable, and cheap, and should be suited for erection at or near the plantations, as the refuse is very useful as manure for continued cultivation.

4. To stimulate the invention or adaptation of such machinery or process, the gov-

ernment of India hereby offers a prize of £5,000 for the machine and process that best fulfills all the requirements named above.

5. Rewards of moderate amount will be given for really meritorious inventions, even though failing to meet entirely all the conditions named.

6. Arrangements will be made by the government of India for the supply of carefully dried stems, and specimens of fiber separated from the bark, but subjected to no other process, to mechanical firms and others desirous of competing, on application to the secretary to the government of India, in the home department.

7. All the machinery, &c., must be brought by the competitors at their own charge, to the locality which will be notified hereafter, probably in the northwest provinces or the Fungat, and there worked under the supervision of their own representatives for a sufficient time, to enable the judges appointed by the government to determine whether all the conditions named have been complied with. The prize machine is to be transferred, if required, to government at five per cent. above cost price; and the patent-right in any such machine to be also transferred, if required, to government, on the latter securing to the patentee a royalty of five per cent. on the cost price of all machines manufactured under the patent during its currency.

8. One year from the date of this advertisement will be allowed for the preparation of the machines and their transport to the locality named for the competition; and the trials will then be made and the decision of the judges announced. If no invention of sufficient merit is received in the above-named period to obtain the prize offered, the government will continue to allow machines to be tendered for trial till the end of two years from the same date, after which, or on award of the prize, the offers herein made will be withdrawn.

THE HATEFUL OR COLORADO GRASSHOPPER, (*Caloptenus spretus*, Uhler.)

As the farmers east of the Mississippi River are deeply interested in knowing whether they are liable to the visitation of this insect, we present such information as has been received since the last publication on the subject. An article in the American Entomologist gives particulars in regard to its invasion of Kansas, Nebraska, Western Missouri, and Western Iowa. Owing to the warmer climate of this section when compared with that of the Rocky Mountains, the spring hatch reach maturity, take wing, and disappear from the 24th of June to the 14th of July, whereas the usual period for the Rocky Mountain swarms to invade these sections ranges from August 27 to the first of October. In 1868, however, the summer being unusually hot, they reached Kansas early in August, two weeks sooner than usual. This insect matured and took wing in Iowa between the 1st and 5th of July, reaching Davenport, 150 miles east of the place from which it started. Although it did considerable damage in its larval and pupa states, but little injury was done by it after taking flight. A large swarm was observed in Jackson County, Minnesota, July 9, 1868, moving north, doing little damage. About the middle of August vast numbers of grasshoppers, apparently of this species, were seen in Lafayette County, Wisconsin, traveling from north to south. No serious injury is reported of this invasion. Mr. Thomas, a member of Dr. Hayden's geological party, found this insect quite abundant, in the perfect state, at St. Joseph, Missouri, June 17, 1869, but when he reached Denver, almost a month later, it was just passing from the pupa to the perfect state.

These facts make it certain that the swarms which traverse the region immediately west of the Mississippi, between the middle of June and the first of August, belong to a different brood from those which invade Kansas and the West between the middle of August and the first of October. This gives us a fixed stand-point for investigation, from which to deduce another conclusion equally certain, that this earlier brood of the States is the produce of the eggs deposited by the western hordes of the

previous summer and fall. It also appears to be pretty well ascertained that the spring brood, hatched in the Mississippi valley, never does much injury after it commences flying, and produces no further broods.

The following are extracts from a letter written by Mr. Byers, of Denver, Colorado, in answer to some inquiries on this subject:

Question. When the swarms (flying) appear in that immediate section, where do they usually come from?

Answer. From some point between north and west, usually about north 30° west. The most destructive flight we ever had here was in 1864. Early in the season we heard of great swarms of grasshoppers hatching out upon the plains of Montana, in the valleys of the Three Forks of the Missouri River, and along the Yellowstone. Later we heard of their progress south and east. August 21st they commenced coming into the St. Vrain cañon or valley, about fifty miles north of Denver; about five days afterward the swarm reached Denver, darkening the sky and often covering the streets. They devoured corn, tomatoes, potato-vines, onions, &c., almost entirely, and within the space of five days. The column moved on at about the rate of ten miles per day, and left the (then) settled portions of Colorado within the valley of the Arkansas. We heard nothing more of them.

But myriads remained or continued arriving from the north and west, and deposited their eggs in plowed fields and upon rolling, sandy, and gravelly land, where the soil was unbroken. In September and October most of them died. In March following the eggs deposited by them began to hatch, first upon the sandy and gravelly hill-sides facing the sun, and, somewhat later, in the fields and colder soils, continuing to appear until late in May. Where numerous, they literally devoured every green thing. If a wheat-field (in which none were hatched) was attacked, they moved across it, or from the circumference to the center, with the regularity and effect of advancing flames. The swarms of 1864 destroyed corn and other late crops; the young of 1865 ate up wheat and other small grains. The comparative damage was probably as one to four, the young brood being far the most destructive.

Mr. Byers, in answer to the request to describe their method of flight, and to state what relation it bears to the wind, says:

Generally they move leisurely, the direction of their flight being influenced largely by the direction of the wind. In fact I attribute their general course mainly to the prevailing winds, which come at that season, almost invariably from the northwest. Toward noon, in bright warm days, they rise by circular flights, each seeming to act individually. When they have reached a considerable height they sail away, with tolerable regularity, in one direction. If there is no wind, many of them continue whirling about in the air, but away beyond, myriads can be seen moving across the sun toward the southeast, looking like snow-flakes. If there is a change in the atmosphere, such as the approach of a thunder storm or gale of wind, they come down precipitately, seeming to fold their wings and fall by force of gravity. If not interrupted by such causes they descend during the afternoon. The swarm of 1864 and brood of 1865 are the only general visitations that have scourged Colorado. Similar ones—both flights and broods—have visited portions of the Territory each year since, but generally confined to particular localities or narrow belts. The swarms that invaded Kansas and portions of western Iowa in 1867 were traced from their hatching grounds in western Dakota and Montana, along the east flank of the Rocky Mountains, and in the valleys and plains of the Black Hills, and between them and the main Rocky range. In 1852 I first observed this insect in the valley of the South Fork of the Columbia, not far from Fort Hall. A swarm, lasting two or three days, passed over from about west-southwest, moving with the wind, at times darkening the sun, covering horses, cattle, and wagons, against which they were driven. The Digger and Snake Indians gathered them for food. In 1865, those of the spring brood which were not injured by fly which attacked them, as soon as their wings were sufficiently developed, took to flight and we lost trace of them on the plains. The same year, in the latter part of August, in the valley of South Boulder, close up to the Snowy range, I found young grasshoppers very numerous, varying in size from those just hatched out to those one-third grown. I know that winter caught and killed these before they were able to fly. Late in 1867 the Middle Park was invaded by a swarm which came from the northwest, and deposited their eggs there. In 1868 those eggs began to hatch, in the lowest and warmest portions of the Park, in June, increasing in July, and continuing to hatch through August in the higher portions of the Park, near the snow-rim. Those hatched first moved from their native place up the Park eastward, but never got out of it. The later broods never left their hatching ground. All were destroyed by the fall snows. From the middle to the 25th of August, 1868, I was on and near the Snowy range, east of Middle Park. There was during this time a large daily flight of grasshoppers from about west-northwest, reaching apparently to the highest limit of vision, even to those standing on the highest peaks. Daily, showers of rain, snow, and

hail were occurring from 12 m. to 3 p. m., during which time these insects were beaten down. They became so chilled and benumbed that they never rose again. The snow fields in many places were literally covered with the dead and dying. Bears were plentiful, feeding and fattening upon them. Hundreds, yes, thousands of bushels might have been shoveled from the cold surface of the snow. I know they did not come from the adjacent Middle Park, because those bred there had not attained their full growth, and never did, as before stated. These migrating swarms, therefore, must have come from beyond the range—from the Green River basin, or, as I think, from the wide, hot, dry plains of Utah.

Such are the personal observations of Mr. Byers, who has been in the West since 1852.

These statements, together with the fact now pretty well established, that the destructive grasshopper of Utah is the *C. spretus* and not the *Oedipoda coralipes*, (Hald.,) show that it is more than probable these swarms do often cross the Rocky Mountain range. They show that, traveling in the course of the wind, they can and do traverse the plains from the mountain base to the borders of Kansas. But it is quite likely that the swarms which cross the plains are those hatched in Colorado and Wyoming from the eggs deposited by the swarms of the previous year east of the mountains. The prevailing opinion of entomologists and others who have studied the history and habits of this species is, that it will never become a permanent resident of that section of the Mississippi Valley which lies immediately west of the river, and that there need be no fear on the part of agriculturists residing east of it that they will ever be troubled by its invasions; but, as has been the case in the settlement of other portions of the country, even in the West, where most damage is done by them, as the country becomes more densely populated, and climatic changes are brought about, this species will sink back to its normal condition.

TESTS OF DEPARTMENT SEEDS.

Dr. Swasey, editor of the Southern Horticulturist, published at Yazoo City, Mississippi, makes the following report on department seeds:

Bates's early sugar corn proves to be an early, productive, and delicious variety of small-eared red corn, and, from its color, quite a novelty. As a first early sort it is desirable, but for the main early crop we decidedly prefer Brill's early sugar corn, which ripens a little later, but is of equal excellence and productiveness, and much larger. This is one of the best early varieties of sweet corn that we have ever tested out of a dozen or more. Indispensable to every amateur and market garden.

The Early Wakefield cabbage proved to be the best early variety, and should be planted extensively as the earliest good cabbage. The heads are small, but solid; tender, and of excellent flavor; and as the plants can be set a foot apart in two-foot rows, perhaps as large a weight of solid white heads can be raised of this variety as of those which are larger.

The Epicurean pea is one of the most delicious peas we have ever tasted; and if it was a first rate bearer, (which last year it was not,) and the pods better filled, we should unhesitatingly pronounce it the best of its season, which is second early.

The Bossin lettuce is a magnificent variety of the Cos family, and beyond all comparison the best of that class that we have ever seen. Planted in March, without extra manuring, many of the plants attained to a diameter of more than twenty inches, and single leaves to over one foot in width. And its delicious tenderness remained unimpaired to the very last—even through the hot and dry weather of July. The flavor was as delicate as its texture, having scarcely a trace of that bitterness so common to non-heading varieties.

McLean's Little Gem pea is rightly named, for it is both small and delicious. Of all the dwarf varieties we have tried, this has proved about the only one worth cultivating. Grows about a foot high, and is literally covered with well-filled pods of large, white, "wrinkled marrows," the richest of peas. Second early.

Simons's Early Blood Turnip beet is much like the old Blood Turnip beet, except being of a lighter color and somewhat smaller.

AGRICULTURE IN LANE COUNTY, OREGON.

This county extends from the Pacific Ocean on the west to the Cascade range on the east, and covers an area of 2,240,000 acres of land, a large amount of which is well adapted to grain growing, stock raising, and agriculture generally.

It was first settled in 1846, but still contains large quantities of vacant land, well adapted to agricultural and lumbering purposes. The soil in the small valleys, and at the immediate foot of and between the hills and mountains, is dark and porous, formed by the admixture of decayed vegetation and a grayish clay loam. This soil, though exceedingly productive, seems to be of a thirsty nature, suffering if the summer drought is of long duration. Along the banks of the rivers and more extended valleys the soil is a rich alluvial deposit of decomposed earth and vegetable mold, producing fine crops of grain, grass, fruit, garden vegetables, corn, roots, and, in fact, all the necessities and luxuries of life. As you leave these bottoms, the soil of the prairies, with but few exceptions, although showing strong alluvial indications, seems to be of a fine quality, and composed of grayish, calcareous, sandy loam.

These lands form a part of the great natural wheat fields of Oregon. And although readily producing grass, fruit, and vegetables of almost every variety, these prairie lands are especially adapted to the raising of wheat, oats, barley, flax, and every kind of small grain.

The kinds of timber found in this county are chiefly fir, cedar, pine, hemlock, oak, ash, maple, and alder, pretty well distributed, and of quality and size adapted to all lumbering purposes.

The population is estimated at about seven thousand. The number of acres in cultivation is about sixty thousand. The yield of various crops for 1868 was as follows:

| | |
|-------------------------|----------|
| Wheat, bushels | 169, 715 |
| Barley, bushels | 10, 802 |
| Oats, bushels | 74, 769 |
| Corn, bushels | 8, 113 |
| Apples, bushels | 28, 818 |
| Potatoes, bushels | 220, 263 |
| Butter, pounds | 237, 454 |
| Cheese, pounds | 15, 690 |
| Tobacco, pounds | 12, 888 |
| Wool, pounds | 159, 715 |
| Hay, tons | 4, 227 |

The stock in the county, as estimated for the same year, was as follows:

| | |
|--------------|---------|
| Cattle | 15, 000 |
| Horses | 6, 000 |
| Hogs | 12, 000 |
| Mules | 300 |
| Sheep | 60, 000 |

There are thirteen saw-mills and four grist-mills in the county.

PREMIUM CROP.

The New York Agricultural Society, at their winter exhibition, found the following to be the best crop of wheat, though no award could be given for less than five acres:

E. S. Hayward, of Rochester, exhibited a superior sample of Diehl

wheat. Area of field, 1.95 acres; expense of seed, cultivation, &c., (including rent of ground, \$28,) \$67 80; yield wheat, 88 bushels; sold at \$1 80 per bushel, \$158 40; straw, \$30. Total, \$188 40. Net profit, \$120 60.

The soil is a gravelly loam, not drained, but high land nearly level. The previous crop was beet seed, raised without manure. The crop before that was corn on a timothy sod, manured on the surface after plowing with thirty loads of well-rotted stable manure per acre. The land on which this crop was raised was plowed about the middle of September, sown broadcast, at the rate of one bushel and a half per acre, after which it was harrowed and rolled with a heavy iron roller. It made its appearance in four or five days above the ground, and at the commencement of winter the growing wheat nearly covered the ground. Commenced harvesting on the 27th; finished on the 29th July. It stood in the field five days, when it was drawn to the barn and immediately threshed and cleaned and weighed, yielding eighty-eight bushels of clean wheat, sixty pounds per bushel, making forty-five bushels and seven pounds per acre.

Expense of crop.

| | |
|--------------------------------------|--------|
| Plowing | \$4 50 |
| Harrowing | 3 00 |
| Sowing | 50 |
| Seed, three bushels, at \$2 60 | 7 80 |
| Reaping and binding | 8 00 |
| Hauling | 3 00 |
| Threshing and cleaning | 10 00 |
| Interest on land at \$200 | 28 00 |
| Marketing crop | 3 00 |
| | <hr/> |
| | 67 80 |
| | <hr/> |

Credit.

| | |
|---------------------------------------|----------|
| Eighty-eight bushels, at \$1 80 | \$158 40 |
| Straw | 30 00 |
| | <hr/> |
| | 188 40 |
| | <hr/> |

Net profit on 1.95 acre, \$120 60.

PREMIUM FLAX.

Zerah Rider, Cambridge, Washington County, received a premium of fifteen dollars on a crop of flax grown on 2.12 acres of land. The land on which this crop was grown is a slate loam, in pasture, and manured the previous year with twenty loads of barn-yard manure spread on the surface and plowed in, and planted in corn and cultivated in the usual way.

Expenses of crop.

| | |
|--|--------|
| Two bushels seed | \$6 00 |
| Plowing, sowing, and harrowing | 6 00 |
| Pulling flax, \$24; drawing, \$3 | 27 00 |
| Rippling and cleaning seed | 7 00 |
| Carting and spreading | 3 00 |

| | |
|------------------------------------|--------|
| Taking up and carting to mill..... | \$4 00 |
| Interest on land..... | 14 00 |
| Dressing and marketing..... | 64 00 |
| | <hr/> |
| | 131 00 |
| | <hr/> |

Credit.

| | |
|--|---------|
| 18 $\frac{16}{54}$ bushels seed..... | \$43 80 |
| 1,280 pounds of flax, at 16 cents..... | 204 80 |
| | <hr/> |
| | 248 60 |
| Expenses..... | 131 00 |
| | <hr/> |
| Net profit..... | 117 60 |
| | <hr/> |

Total acreage and percentage proportions of each kind of corn and green crop in each division of the British United Kingdom.

| Description of crops. | Year. | ENGLAND. | | WALES. | | SCOTLAND. | | IRELAND. | | Total for Brit. United Kingdom, including Isle of Man and Channel Islands. |
|---|-------|-----------|--|---------|--|-----------|--|-----------|--|--|
| | | Acres. | Percentage pro- portions of each kind of corn and green crop. | Acres. | Percentage pro- portions of each kind of corn and green crop. | Acres. | Percentage pro- portions of each kind of corn and green crop. | Acres. | Percentage pro- portions of each kind of corn and green crop. | |
| | | | | | | | | | | |
| CORN CROPS. | | | | | | | | | | |
| Wheat..... | 1868 | 3,396,890 | 45.3 | 130,552 | 23.8 | 124,683 | 9.1 | 286,790 | 13.1 | 3,951,018 |
| | 1869 | 3,417,054 | 43.9 | 135,562 | 24.4 | 135,741 | 9.6 | 281,117 | 12.7 | 3,981,989 |
| Barley or bere..... | 1868 | 1,780,201 | 23.7 | 151,068 | 27.7 | 219,515 | 15.8 | 188,952 | 8.5 | 2,348,068 |
| | 1869 | 1,864,088 | 24.0 | 157,582 | 28.4 | 229,810 | 16.2 | 223,338 | 10.1 | 2,483,277 |
| Oats..... | 1868 | 1,488,470 | 19.9 | 257,153 | 46.9 | 1,011,430 | 72.9 | 1,099,919 | 77.5 | 4,403,987 |
| | 1869 | 1,511,975 | 19.4 | 252,970 | 45.5 | 1,017,775 | 71.8 | 1,084,788 | 76.3 | 4,480,125 |
| Rye..... | 1868 | 38,397 | 5.5 | 2,110 | 4.4 | 6,389 | 4.4 | 7,827 | 4.5 | 54,827 |
| | 1869 | 52,709 | 7.7 | 2,610 | 5.5 | 8,780 | 6.6 | 8,770 | 4.4 | 72,986 |
| Beans..... | 1868 | 503,700 | 6.7 | 3,777 | 7.7 | 22,423 | 1.5 | 8,813 | 4.4 | 538,943 |
| | 1869 | 548,257 | 7.0 | 3,944 | 7.7 | 23,003 | 1.6 | 8,893 | 4.4 | 584,251 |
| Peas..... | 1868 | 291,560 | 3.9 | 2,673 | 5.5 | 2,001 | 3.3 | 1,157 | 1.1 | 297,612 |
| | 1869 | 390,950 | 5.0 | 3,160 | 5.5 | 2,067 | 2.2 | 1,194 | 1.1 | 397,483 |
| Total of corn crops..... | 1868 | 7,499,218 | 100.0 | 517,873 | 100.0 | 1,336,441 | 100.0 | 2,192,785 | 100.0 | 11,659,855 |
| | 1869 | 7,755,033 | 100.0 | 555,828 | 100.0 | 1,417,176 | 100.0 | 2,207,970 | 100.0 | 12,000,111 |
| GREEN CROPS. | | | | | | | | | | |
| Potatoes..... | 1868 | 327,173 | 12.7 | 47,431 | 37.0 | 106,939 | 24.8 | 1,034,853 | 71.1 | 1,584,213 |
| | 1869 | 356,829 | 12.9 | 49,107 | 38.5 | 179,275 | 26.0 | 1,041,897 | 70.9 | 1,635,347 |
| Turnips and Swedes..... | 1868 | 1,605,980 | 62.1 | 70,350 | 54.8 | 488,812 | 72.7 | 320,066 | 21.9 | 2,455,536 |
| | 1869 | 1,614,580 | 58.5 | 67,098 | 52.6 | 489,848 | 71.2 | 311,860 | 21.9 | 2,502,512 |
| Mangold..... | 1868 | 244,363 | 9.4 | 3,955 | 3.1 | 793 | 1.1 | 19,067 | 1.3 | 268,780 |
| | 1869 | 257,182 | 10.4 | 4,528 | 3.6 | 1,032 | 2.2 | 21,039 | 1.4 | 314,421 |
| Carrots..... | 1868 | 11,959 | 5.5 | 368 | 3.3 | 988 | 1.1 | 3,789 | 3.3 | 17,815 |
| | 1869 | 13,033 | 5.5 | 324 | 3.3 | 987 | 1.1 | 3,762 | 3.3 | 18,831 |
| Cabbages, kohlrabi, and rape..... | 1868 | 111,156 | 4.3 | 769 | 6.6 | 3,158 | 5.5 | 42,268 | 2.9 | 157,525 |
| | 1869 | 141,156 | 5.1 | 795 | 6.6 | 3,300 | 5.5 | 42,237 | 2.9 | 187,607 |
| Vetches, lucerne, and other green crop, except clover or grass. | 1868 | 284,388 | 11.0 | 5,419 | 4.2 | 11,985 | 1.8 | 36,264 | 2.5 | 341,888 |
| | 1869 | 346,318 | 12.6 | 5,600 | 4.4 | 14,075 | 2.0 | 38,210 | 2.6 | 407,155 |
| Total of green crop..... | 1868 | 2,555,019 | 100.0 | 128,292 | 100.0 | 672,555 | 100.0 | 1,456,307 | 100.0 | 4,865,057 |
| | 1869 | 2,729,098 | 100.0 | 127,452 | 100.0 | 682,517 | 100.0 | 1,468,895 | 100.0 | 5,065,933 |

Statement of area and acreage under crops and grass for hay in various British colonies during 1867 and 1868.

[The area and acreage are stated in English statute acres.]

| Countries. | Total area. | Total acreage under crops and grass, &c. |
|------------------------|-------------|--|
| New South Wales..... | 206,999,680 | 413,164 |
| Victoria..... | 55,571,840 | 631,207 |
| South Australia..... | 245,329,920 | 810,731 |
| Western Australia..... | 640,000,000 | 95,533 |
| Queensland..... | 433,920,000 | 70,880 |
| Tasmania..... | 16,777,600 | 172,393 |
| New Zealand..... | 68,005,760 | 770,872 |
| Natal..... | 10,332,800 | 121,723 |
| Cape of Good Hope..... | 128,390,400 | ..... |

Statement of the estimated quantities, in English imperial bushels, of the principal crops produced in the various British colonies, 1867 and 1868.

| Countries. | Wheat. | Oats. | Maize. | Potatoes. |
|--------------------------|------------|------------|-----------|-----------|
| | | | | Tons. |
| Canada, Dominion of..... | 36,365,000 | 51,600,000 | 3,400,000 | ..... |
| New South Wales..... | 1,433,807 | 156,965 | 3,132,505 | 33,482 |
| Victoria..... | 3,411,663 | 2,333,472 | 11,345 | 117,787 |
| South Australia..... | 2,579,894 | 78,554 | ..... | 6,538 |
| Tasmania..... | 894,814 | 632,461 | ..... | 37,568 |
| New Zealand..... | 1,619,169 | 2,655,294 | ..... | 56,538 |
| Natal..... | 33,600 | 10,992 | 1,192,806 | *268,239 |

* Bushels.

Statement of the estimated quantities of the principal crop product in foreign countries, in imperial bushels, according to the latest returns.

| Products. | Sweden, 1867. | Norway, 1865. | Holland, 1867. | France, 1868. | Greece, 1867. |
|----------------------|---------------|---------------|----------------|---------------|---------------|
| Wheat and spelt..... | 1,487,433 | 271,384 | 3,688,504 | 322,067,256 | 13,432,268 |
| Barley..... | 9,292,019 | 3,415,546 | 4,214,385 | 54,924,897 | 5,738,414 |
| Rye..... | 10,591,001 | 651,390 | 6,351,062 | 79,542,149 | *1,091,838 |
| Peas..... | 1,548,540 | 186,561 | 882,335 | 12,643,690 | *22,008 |
| Beans..... | | | 1,588,955 | | *4,110,820 |
| Buckwheat..... | 19,739 | ..... | 4,074,868 | 31,043,526 | 469,560 |
| Maize..... | ..... | ..... | ..... | 30,144,370 | 8,546,225 |
| Oats..... | 24,606,713 | 7,881,359 | 11,054,142 | 200,326,407 | 528,649 |

* Pounds.

Statement of the estimated average yield, per statute acre, of the principal crops, in imperial bushels, in various foreign countries.

| Countries. | Date of return. | Wheat and spelt. | Barley. | Oats. | Rye. | Beans and peas. | Maize. | Potatoes. |
|--------------|-----------------|------------------|---------|-------|-------|-----------------|--------|-----------|
| Sweden..... | 1867 | ..... | ..... | ..... | ..... | 11.9 | ..... | 82.2 |
| Norway..... | 1865 | 22.8 | 28.4 | 35.8 | 22.3 | 19.6 | ..... | 236.1 |
| Holland..... | 1867 | 18.9 | 36.5 | 42.4 | 12.9 | 21.1 | ..... | 151.7 |
| France..... | 1868 | 18.4 | 19.9 | 24.5 | 16.6 | 15.0 | 18.5 | 129.0 |
| Greece..... | 1867 | 35.7 | 48.7 | 51.5 | ..... | 47.1 | ..... | ..... |

Statement of the number of live stock in the United Kingdom and in various foreign countries, furnished by the statistical departments of the respective countries.

| Countries. | Date of return. | Horses. | Cattle. | | Sheep and lambs. | Pigs. |
|--|--------------------------|-------------|-------------|--------------|------------------|-------------|
| | | | Cows. | Total. | | |
| Great Britain | 1869 | 1, 461, 061 | 2, 135, 070 | 5, 313, 473 | 29, 538, 141 | 1, 930, 452 |
| Ireland | 1869 | 527, 248 | 1, 503, 714 | 3, 737, 794 | 4, 648, 158 | 1, 079, 793 |
| Total United Kingdom, including Isle of Man and Channel islands..... | 1869 | 1, 998, 147 | 3, 656, 304 | 9, 078, 282 | 34, 250, 272 | 3, 023, 394 |
| Russia in Europe, (exclusive of Poland and Finland) ... | Average of 1859 to 1863. | { | { | 22, 816, 000 | 39, 315, 000 | 9, 517, 000 |
| Russia in Asia..... | 1863. | | | 2, 628, 000 | 5, 815, 000 | 580, 000 |
| Sweden | 1867 | 433, 959 | 1, 211, 468 | 1, 942, 137 | 1, 621, 931 | 363, 371 |
| Norway | 1865 | 149, 167 | 690, 777 | 953, 036 | 1, 705, 394 | 96, 166 |
| Denmark | 1866 | 352, 603 | 811, 831 | 1, 193, 861 | 1, 875, 052 | 381, 512 |
| Prussia | 1866 | 2, 313, 817 | 4, 865, 898 | 7, 996, 818 | 22, 262, 087 | 4, 875, 114 |
| Wurtemberg..... | 1867 | ..... | 465, 943 | 911, 013 | 655, 856 | 254, 888 |
| Bavaria | 1863 | ..... | 1, 521, 113 | 3, 162, 387 | 2, 039, 983 | 921, 456 |
| Saxony..... | 1867 | 107, 222 | 413, 755 | 625, 260 | 304, 087 | 325, 564 |
| Holland..... | 1867 | 255, 130 | ..... | 1, 361, 278 | 1, 027, 215 | 302, 514 |
| Belgium..... | 1856 | 277, 311 | ..... | 1, 257, 649 | 583, 485 | 458, 418 |
| France | 1866 | 2, 313, 232 | 6, 694, 502 | 12, 733, 188 | 30, 386, 233 | 5, 889, 624 |
| Spain | 1865 | ..... | ..... | 2, 904, 598 | 22, 054, 967 | 4, 264, 817 |
| Italy | 1867 | ..... | ..... | 3, 708, 635 | 11, 040, 339 | 3, 886, 731 |
| Austria | 1864 | 3, 460, 400 | 6, 094, 865 | 13, 660, 322 | 16, 573, 459 | 7, 914, 855 |
| Switzerland..... | 1866 | ..... | 627, 116 | 992, 895 | 445, 400 | 304, 191 |
| Greece..... | 1867 | 98, 938 | 51, 994 | 109, 904 | 2, 539, 538 | 55, 776 |

WATER FOR TEAMS.

Levi Bartlett, of Warner, New Hampshire, writes as follows concerning provisions for watering teams on public highways:

In the article in the report of 1863 on county roads and road laws, page 361, relative to "water for teams," it is said: "It is a matter of so great importance that a full supply of water by the roadside be provided for teams, at intervals of at least an average of five miles, that the subject should no longer be neglected, but a provision for securing a supply should be made in the county road laws." I am very happy to say that such a provision has been made by our State laws. In the town where I reside (Warner, New Hampshire) there are on the main traveled road through the town four of these permanent watering troughs, and four on the cross roads. The owners receive from the town treasury two dollars, each, annually. I think every tax-payer in the town is perfectly satisfied with the arrangement. Two of the troughs are supplied with water by lead or wooden pipes, the others are supplied from permanent springs issuing from the base of hills, near the roadside, in open spouts. Such is the temperature of these spring waters that there is no trouble with ice in our coldest winters.

GRAIN IN NORTHERN RUSSIA.

The following has been received from Eugene Schuyler, United States consul at Revel, (on the Gulf of Finland, west of St. Petersburg,) Russia:

According to the results of the harvests of 1869 the exports ought to experience a sensible augmentation, for the cereals are so abundant as to allow the filling up of the reserve storehouses, which had been entirely exhausted, besides furnishing enough for local consumption, and leaving a large quantity for foreign demands.

The distilleries, which had suffered so much in consequence of the poor harvests, are reviving, and in Esthonia there are already 133 in full activity. This prosperous condition is not due solely to the abundance of grain, but in great part to a chance event which has very much increased the prices of whisky (*vodka*) in the government of St. Petersburg—the burning of the bridge over the river Usta, on the Moscow-Petersburg railway, which occurred in the early days of November. The arrivals from Moscow

and the governments beyond Moscow being suddenly cut off, recourse was necessarily had to the Baltic provinces, which have done an extensive business.

Wheat, which is but little cultivated in these regions, has given satisfactory results wherever it has been sown. The price is about 180 rubles per last. (This is equivalent to about \$1 33 per bushel.)

Rye is abundant, but light in weight, which makes it little fit for export. The price has sensibly fallen from 12 rubles to 7 the tchetvert, and at that there are no buyers; only 6 rubles per tchetvert of 180 pounds is offered.

Barley leaves nothing to be desired in regard to quality, but it is to be regretted that the rains of September and October have given it an unequal color. Prices are now at 6½ rubles the tchetvert; before the harvest they were 12 rubles.

Oats are excellent, both in quality and quantity, and a better harvest has never been known. The advantageous prices ought to increase the foreign demand. The price is 3½ rubles the tchetvert, and the weight is generally 78 pounds.

The harvest of potatoes has not been everywhere equal, but it is generally satisfactory, and the peasants have enough to restore to the reserve warehouses the cereals they had withdrawn for seed and food.

The Russian tchetvert, or quarter, is equal to 5.46 bushels English. The last is equal to 16 tchetverts. Ten Russian pounds equal 9 English pounds. The ruble at present rates of exchange is equal to about 60½ cents.

FACTS FROM VARIOUS SOURCES.

William Magie, of Butler County, Ohio, has sold this season thirty-eight hogs, averaging 528.87 pounds each, dressed weight. The average gross weight was 611 pounds. These hogs were twenty-one months old. In Burlington County, New Jersey, Isaac Harrison killed a lot of thirty-three hogs which averaged 515½ pounds, dressed weight; Joshua Forsyth killed ten hogs which averaged 545 pounds; and Joseph Holloway killed thirty-eight head, littered last spring, (killed second week in February,) which averaged 348 pounds, and nine hogs which averaged 500 pounds.

The Philadelphia Commercial List states that the oyster trade of that city employs 225 boats, averaging 23 tons burden, with an average of five men to each boat. Each boat averages nine trips per year, and brings about 166,000 oysters per trip. The whole fleet brings up an aggregate of 324,000,000 during the season. The several railroads also bring in 8,000,000 oysters, making an aggregate of not less than 332,000,000 oysters used in the trade of Philadelphia each year, and it is estimated that if all the facts could be reached the figures would amount to 500,000,000. The crop averages \$5 per thousand at a low estimate.

Mr. Hoag, a California silk culturist, states that he has cleared above all expenses \$3,500 from the mulberry product of three and a half acres. The labor and other expenses amounted to \$472. Even last year, a bad one for worms, \$796 clear profit was realized per acre, allowing \$3 50 per ounce for the eggs, which are always marketable on the ground for cash, European agents seeking them with eagerness. Mr. H. thinks Europe will give a steady market for \$9,000,000 worth of eggs per year, and that California can monopolize it.

The largest dairy in California is in Marion County, and consists of 3,600 milch cows, mostly of the Devon and the Durham breed. The quantity of butter made last year was 400,000 pounds, for which 45 cents per pound was realized. About 500 heifer calves are raised every year. About 2,000 hogs are fattened on the skimmed milk and buttermilk, and 250 to 300 cows and beef steers are sold off each year.

Orleans County, New York, before the close of navigation, shipped 218,911 barrels of apples, valued at about \$592,000. Niagara County shipped about the same amount, realizing a rather higher average price,

making the receipts of those two counties for apples alone over eleven hundred thousand dollars. Large quantities were also sent to market from adjoining counties. One town in Monroe County shipped about 48,000 barrels.

Peaches ripen in Florida as follows: Hale's Early, June 10 to 15; Early Tillotson and Yellow St. John, June 15 to 20; Canary, June 30, Amelia, July 1 to 10; Bergen Yellow, July 10; Grosse Mignonne, July 15; Late Admirable, July 20; Oldmixon Free, July 15 to 30; Great Eastern, July 20; Pucelle de Malines, July 10; Late Rareripe, August 1; Lagrange, August 15 to 30; Gaylord, August 15; Owen's Seedling, August 1 to 15; Osceola, September 1; Piquet's Late, September 1 to 15; Fruitland's Seedling, September 5 to 20; President Church, September 15; Lady Parham, October 1; Baldwin's Late, October 10; Julia, October 30.

The Rocky Mountain News gives the following estimates of crops of small grain last year in the valleys of St. Vrain, Left Hand, and Boulder:

St. Vrain.—Wheat, 19,414 bushels; oats and barley, 51,630 bushels; against 21,673 bushels of wheat and 31,023 bushels of oats and barley in 1868. The averages per acre were: Wheat, 23 bushels; oats, 35 bushels. The corn crop generally good. Potatoes a failure.

Left Hand.—Wheat, 10,618 bushels; oats and barley, 18,217 bushels; against 10,350 bushels of wheat and 13,707 bushels of oats and barley in 1868.

Boulder.—Wheat, 45,060 bushels; oats and barley, 62,715 bushels; against 46,350 bushels of wheat and 42,000 bushels of oats and barley in 1868. These estimates are based upon figures obtained personally from a large proportion of the farmers of the valleys named.

METEOROLOGY.

[COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY THE OBSERVERS OF THE SMITHSONIAN INSTITUTION. NOTES OF THE WEATHER INCLUDE HEIGHTS RECEIVED UP TO FEBRUARY 12, ONLY : THE TABLE INCLUDES THOSE RECEIVED UP TO FEBRUARY 21.]

JANUARY, 1870.

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, the amount of rain and melted snow, (in inches and tenths,) for January, 1870, by the observers and at the stations named. Daily observations at 7 a. m., and 2 and 9 p. m.

[illegible]

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain and melted snow. |
|------------------------|------------------|---------------------------|--------|---------------------------|-------|---------------------------|------------------------|--------------------------|
| MASSACHUSETTS. | | | | | | | | |
| Kingston | Plymouth | G. S. Newcomb | 27 | 56 | 9 | 13 | 33.9 | 6.05 |
| Topsfield | Essex | S. A. Merriam | 23 | 54 | 9 | 2 | 31.1 | 6.04 |
| Lawrence | do | John Fallon | 17, 23 | 55 | 9 | 5 | 30.4 | 6.98 |
| Georgetown | do | S. A. Nelson | 23 | 56 | 14 | 9 | 31.6 | 8.50 |
| Boston | Suffolk | F. H. Appleton, A. B. .. | 23 | 65 | 9 | 12 | 34.1 | ..... |
| Milton | Norfolk | Rev. A. K. Teele | 23 | 54 | 9 | 9 | 35.9 | 5.32 |
| Cambridge | Middlesex | Mrs. J. B. Perry | 23 | 62 | 9 | 6 | 36.0 | ..... |
| North Billerica | do | Rev. E. Nason and son .. | 2 | 56 | 9 | 4 | 32.4 | ..... |
| West Newton | do | Jno. H. Bixby | 23 | 62 | 9 | 4 | 34.8 | ..... |
| New Bedford | Bristol | Sam'l Rodman | 26 | 51 | 9 | 9 | 35.4 | 5.96 |
| Worcester | Worcester | Jos. Draper, M. D. | 23 | 54 | 9 | 6 | 31.4 | 6.34 |
| Mendon | do | Jno. G. Metcalf, M. D. .. | 17 | 56 | 9 | 2 | 31.4 | 6.20 |
| Lunenburg | do | Geo. A. Cunningham .. | 23 | 54 | 9 | 4 | 30.2 | 8.25 |
| Amherst | Hampshire | Prof. E. S. Snell | 23 | 54 | 9 | 5 | 30.8 | 5.87 |
| Richmond | Berkshire | Wm. Bacon | 26 | 48 | 14 | 7 | 29.2 | 10.45 |
| Williams College | do | Prof. A. Hopkins | 23 | 54 | 9, 14 | 2 | 29.4 | 5.46 |
| Hinsdale | do | Rev. E. Dewhurst | 23 | 48 | 8 | — 8 | 24.6 | 5.10 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 31.9 | 6.66 |
| RHODE ISLAND. | | | | | | | | |
| Newport | Newport | W. H. Crandall | 25 | 51 | 9 | 17 | 36.9 | 5.75 |
| CONNECTICUT. | | | | | | | | |
| Columbia | Tolland | Wm. H. Yeomans | 27, 28 | 58 | 9 | 2 | 34.4 | 11.50 |
| Middletown | Middlesex | Prof. Jno. Johnston .. | 2, 17 | 54 | 9 | 4 | 32.9 | 5.13 |
| Colebrook | Litchfield | Charlotte Rockwell | 23 | 53 | 9 | — 7 | 27.8 | 4.73 |
| Brookfield | Fairfield | Rev. S. W. Roe | 2 | 58 | 9 | 15 | 35.7 | 6.40 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 32.7 | 6.94 |
| NEW YORK. | | | | | | | | |
| Moriches | Suffolk | E. A. Smith & daugh'rs .. | 26, 27 | 59 | 9 | 12 | 40.5 | 5.00 |
| South Hartford | Washington .. | G. M. Ingalsbe | 17 | 56 | 14 | — 9 | 29.7 | 2.30 |
| Fort Edward | do | Prof. J. S. Cooley | 17 | 52 | 14 | — 4 | 29.8 | ..... |
| Hudson | Columbia | Dr. G. P. Hachenberg .. | 23 | 54 | 14 | 5 | 33.2 | 2.84 |
| Garrison's | Putnam | Thos. B. Arden | 23 | 58 | 9, 14 | 11 | 33.6 | 5.04 |
| Throg's Neck | West Chester .. | Miss E. Morris | 24 | 56 | 9 | 8 | 32.0 | ..... |
| White Plains | do | O. R. Willis | 16, 18 | 60 | 9 | 14 | 35.6 | ..... |
| Deaf and Dumb Ins .. | New York | Prof. O. W. Morris | 23 | 56 | 9 | 15 | 37.9 | 5.10 |
| Rutgers Fem. Col. | do | Mrs. M. M. Marsh | 13 | 64 | 9 | 14 | 39.7 | 4.91 |
| Flatbush | Kings | Rev. Eli T. Mack | 22 | 56 | 10 | 18 | 36.8 | 4.31 |
| Glasco | Ulster | D. B. Hendricks | 24 | 55 | 14 | 7 | 32.2 | 4.74 |
| Newburg | Orange | Jas. H. Gardiner | 23 | 57 | 14 | 12 | 35.3 | 3.54 |
| Minaville | Montgomery .. | J. W. Bussing | 17 | 50 | 14 | — 2 | 27.1 | 4.76 |
| Sloansville | Schoharie | G. W. Potter | 17 | 68 | 14 | 8 | 29.6 | ..... |
| Cooperstown | Otsego | G. Pomeroy Keese | 17 | 57 | 14 | — 1 | 28.0 | 4.17 |
| Gouverneur | St. Lawrence .. | C. H. Russell | 17 | 49 | 14 | — 14 | 22.5 | 4.25 |
| North Hammond | do | C. A. Wooster | 17 | 50 | 14 | — 14 | 24.4 | 5.94 |
| Houseville | Lewis | Walter D. Yale | 17 | 49 | 14 | — 11 | 24.6 | 6.49 |
| Leyden | do | C. C. Merriam | 17 | 47 | 14 | — 13 | 23.1 | 4.15 |
| Utica | Oneida | J. Gilbert Williams .. | 26 | 53 | 14 | 5 | 31.1 | 2.98 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum temperature. | Date. | Minimum temperature. | Mean temperature. | Rain and melted snow. |
|------------------------|------------------|----------------------------|------------|----------------------|-------|----------------------|-------------------|-----------------------|
| NEW YORK—Con'd. | | | | | | | | |
| South Trenton | Oneida | Storrs Barrows | 17 | 52 | 14 | — 2 | 26.1 | 4.47 |
| Cazenovia | Madison | Prof. Wm. Soule | 17 | 53 | 14 | — 1 | 28.0 | ..... |
| Oneida | do | S. Spooner, M. D. | 17, 18 | 56 | 14 | 2 | 29.7 | 2.39 |
| Depauville | Jefferson | Henry Haas | 17 | 47 | 14 | — 9 | 24.6 | 4.95 |
| Oswego | Oswego | Wm. S. Malcom | 23 | 57 | 14 | 1 | 30.1 | 3.28 |
| Palermo | do | E. B. Bartlett | 17 | 50 | 14 | — 9 | 27.1 | 4.30 |
| Waterbury | Tompkins | D. Trowbridge | 17 | 54 | 14 | 3 | 28.1 | ..... |
| Nichols | Tioga | Rob't Howell | 17 | 60 | 7, 14 | 9 | 31.8 | ..... |
| Newark Valley | do | Rev. Sam'l Johnson | 17 | 57 | 14 | 4 | 31.2 | 2.20 |
| Himrods | Yates | G. D. Baker | 17 | 53 | 14 | 4 | 28.7 | 3.19 |
| Rochester | Monroe | H. W. Mathews | 2 | 53 | 14 | 8 | 30.4 | 3.40 |
| Do | do | W. M. L. Fiske, M. D. .. | 17 | 51 | 14 | 7 | 29.4 | 3.32 |
| Little Genesee | Allegany | Dan'l Edwards | 17 | 52 | 9, 14 | 8 | 28.3 | 5.07 |
| Suspension Bridge .. | Niagara | W. Martin Jones | 17 | 52 | 14 | 7 | 28.3 | ..... |
| Buffalo | Erie | Wm. Ives | 17 | 51 | 14 | 8 | 29.0 | 5.94 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 30.2 | 4.19 |
| NEW JERSEY. | | | | | | | | |
| Paterson | Passaic | Wm. Brooks | 23 | 55 | 9 | 13 | 34.8 | 5.01 |
| Newark | Essex | W. A. Whitehead | 23, 26 | 57 | 9 | 16 | 36.1 | 4.73 |
| New Brunswick | Middlesex | I. E. Hasbrouck | 17 | 61 | 9 | 16 | 37.3 | 3.15 |
| Trenton | Mercer | E. R. Cook | 16 | 67 | 9 | 18 | 41.0 | 5.77 |
| Rio Grande | Cape May | Mrs. J. R. Palmer | 13 | 62 | 9 | 17 | 40.5 | 3.63 |
| Moorestown | Burlington | Thos. J. Beans | 17 | 67 | 9 | 15 | 38.3 | 3.12 |
| New Germantown | Hunterton | A. B. Noll | 2, 23 | 56 | 9 | 9 | 33.9 | 3.90 |
| Lesser Cross Roads .. | Somerset | John Fleming | 2, 17, 23 | 58 | 9 | 14 | 36.1 | ..... |
| Haddonfield | Camden | John Boadle | 17 | 67 | 9 | 18 | 38.7 | 3.54 |
| Newfield | Gloucester | E. D. Couch | 17 | 68 | 9 | 12 | 40.3 | ..... |
| Greenwich | Cumberland | Miss R. C. Sheppard .. | 13, 17, 23 | 62 | 9 | 17 | 40.7 | 2.15 |
| Vineland | do | John Ingram, M. D. | 17 | 63 | 9 | 12 | 40.1 | 3.35 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 38.2 | 3.84 |
| PENNSYLVANIA. | | | | | | | | |
| Nyces | Pike | John Grathwohl | 23 | 60 | 9 | 5 | 29.8 | 4.24 |
| Hamlington | Wayne | Jas. D. Stocker | 23 | 56 | 9 | 9 | 33.1 | 4.07 |
| Dyberry | do | Theodore Day | 13, 17, 23 | 52 | 9 | 5 | 28.9 | 4.33 |
| Fallsington | Bucks | Eben'r Hanco | 17, 23 | 61 | 9 | 17 | 37.0 | 3.80 |
| Philadelphia | Philadelphia .. | Prof. J. A. Kirkpatrick .. | 17 | 64 | 9 | 19 | 40.5 | 4.01 |
| Germantown | do | Thos. Meehan | 17 | 65 | 9 | 16 | 33.7 | ..... |
| Do | do | Ernest Turner | 17 | 64 | 9 | 17 | 39.3 | 13.65 |
| Horsham | Montgomery .. | Miss Anna Spencer | 23 | 63 | 9 | 16 | 37.4 | 3.81 |
| Plymouth Meeting | do | M. H. Corson | 17 | 64 | 9 | 17 | 38.0 | 3.89 |
| White Hall | Lehigh | Edw'd Kohler | 2 | 55 | 9 | 10 | 34.7 | ..... |
| Factoryville | Wyoming | Rodman Sisson | 17 | 56 | 9 | 6 | 31.2 | 2.88 |
| Reading | Berks | J. Heyl Raser | 17 | 63 | 9 | 17 | 39.4 | 3.97 |
| West Chester | Chester | Geo. Martin, M. D. | 23 | 62 | 9 | 14 | 37.1 | 3.94 |
| Parkersville | do | F. Darlington, M. D. | 26 | 60 | 9 | 18 | 38.3 | 4.00 |
| Ashtland | Schuylkill | Rev. W. E. Honeyman .. | 26 | 55 | ..... | ..... | 35.8 | ..... |
| Ephrata | Lancaster | W. H. Spera | 23 | 64 | 9 | 14 | 41.7 | 3.30 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain and melted snow. |
|--------------------|----------------|---|------------|---------------------------|-------------|---------------------------|------------------------|--------------------------|
| NORTH CAROLINA. | | | | | | | | |
| Kenansville..... | Duplin..... | Rev. Jas. M. Sprunt... | 17 | 80 | 10 | 24 | 53.6 | ..... |
| Goldsboro'..... | Wayne..... | E. W. Adams, A. M.... | 17 | 80 | 10 | 22 | 52.6 | 3.09 |
| Oxford..... | Granville..... | W. R. Hicks, M. D.... | 17 | 70 | 9, 10 | 22 | 46.7 | 3.50 |
| Chapel Hill..... | Orange..... | David S. Patrick..... | 22 | 71 | 3 | 28 | 51.7 | ..... |
| Albemarle..... | Stanley..... | F. J. Kron..... | 17 | 74 | 5 | 12 | 43.9 | 4.51 |
| Statesville..... | Iredell..... | Thomas A. Allison.... | 13, 17 | 62 | 5, 9, 10 | 14 | 39.5 | 5.88 |
| Asheville..... | Buncombe..... | E. J. Aston..... | 23 | 65 | 9 | 12 | 41.7 | 3.50 |
| Do..... | do..... | J. T. E. Hardy, M. D.. | 23 | 66 | 9 | 10 | 41.5 | ..... |
| Averages..... | | | | | | | 46.4 | 4.08 |
| SOUTH CAROLINA. | | | | | | | | |
| Anderson C. H.... | Anderson..... | E. J. Earle..... | 15, 17 | 66 | 10 | 20 | 47.2 | 5.70 |
| Gowdeysville..... | Union..... | Charles Petty..... | 13 | 66 | 10 | 18 | 47.1 | 4.45 |
| Bluffton..... | Beaufort..... | J. St. J. Guerard, M. D. | 18 | 78 | 5 | 32 | 56.1 | 3.70 |
| Averages..... | | | | | | | 50.1 | 4.62 |
| GEORGIA. | | | | | | | | |
| Berne..... | Camden..... | H. L. Hillyer..... | 17 | 78 | 3 | 24 | 52.3 | ..... |
| Penfield..... | Greene..... | S. P. Sanford..... | 13, 14, 17 | 67 | 9, 10 | 20 | 47.0 | 2.90 |
| Atlanta..... | Fulton..... | F. Deckner and son. { 12, 13, 14, 15, 16, 17, 28 | | 63 | 9, 10 | 15 | 45.1 | 5.31 |
| Averages..... | | | | | | | 48.1 | 4.11 |
| ALABAMA. | | | | | | | | |
| Rockville..... | Jefferson..... | Miss Ella B. Shields... | 16 | 72 | 9 | 33 | 54.0 | 4.13 |
| Carlowville..... | Dallas..... | H. L. Allison, M. D.... | 16 | 74 | 2, 9 | 28 | 50.3 | 5.05 |
| Coatopa..... | Sumpter..... | S. K. Jennings, M. D.. | 16, 24 | 73 | 9 | 23 | 50.2 | 6.50 |
| Fish River..... | Baldwin..... | W. J. Vankirk..... | 15 | 72 | 4 | 30 | ..... | 1.70 |
| Mobile..... | Mobile..... | Lewes B. Taylor..... | 15 | 68 | 5 | 27 | 52.7 | 3.51 |
| Averages..... | | | | | | | 51.8 | 4.18 |
| FLORIDA. | | | | | | | | |
| Jacksonville..... | Duval..... | A. S. Baldwin..... | 17 | 82 | 10 | 32 | 59.3 | 1.05 |
| Pilatka..... | Putnam..... | Gen. G. D. Robinson.. | 15, 17 | 84 | 5 | 29 | 59.6 | 2.38 |
| Averages..... | | | | | | | 59.5 | 1.72 |
| TEXAS. | | | | | | | | |
| Houston..... | Harris..... | Miss E. H. Baxter..... | 16 | 80 | 2 | 35 | 54.8 | ..... |
| Palestine..... | Anderson..... | N. S. Brooks..... | 12, 22 | 76 | 17 | 24 | 51.1 | 1.70 |
| Lavacca..... | Calhoun..... | L. D. Heaton..... | 25, 26 | 76 | 3, 8 | 38 | 53.2 | 4.30 |
| Clinton..... | De Witt..... | A. C. White, M. D.... | 16 | 80 | 2 | 31 | 55.2 | 0.80 |
| Austin..... | Travis..... | J. Van Nostrand..... | 15 | 76 | 17 | 29 | 51.2 | 0.64 |
| Lockhart..... | Caldwell..... | Lum Woodruff..... | 22 | 76 | 2 | 30 | 52.1 | ..... |
| Averages..... | | | | | | | 52.9 | 1.86 |
| LOUISIANA. | | | | | | | | |
| New Orleans..... | Jefferson..... | Robt. W. Foster..... | 22 | 76 | 2, 5, 9, 10 | 34 | 55.0 | 4.75 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain and melted snow. |
|-----------------------|------------------|---------------------------|----------------------|---------------------------|-----------|---------------------------|------------------------|--------------------------|
| MISSISSIPPI. | | | | | | | | |
| Columbus | Lowndes | James S. Sull | 16 | 73 | 9 | 23 | 46.4 | 7.73 |
| Marion | Lauderdale | Thos. W. Florer | 12, 30 | 78 | 2, 10 | 24 | 50.3 | 4.10 |
| Grenada | Yalabusha | R. S. Ringgold | 16 | 70 | 9 | 24 | 43.4 | 8.75 |
| Near Brookhaven .. | Lawrence | Mrs. W. E. A. Keenan .. | 16 | 75 | 5 | 26 | 51.0 | 9.40 |
| Natchez | Adams | Wm. McCary | 16 | 72 | 2 | 27 | 51.9 | 7.72 |
| Averages | | | | | | | 48.6 | 7.54 |
| ARKANSAS. | | | | | | | | |
| Helena | Phillips | O. F. Russell | 16 | 72 | 9, 18, 19 | 26 | 45.0 | ..... |
| TENNESSEE. | | | | | | | | |
| Elizabethton | Carter | Chas. H. Lewis | 17 | 72 | 9 | 6 | 41.7 | 2.65 |
| Tusculum College .. | Green | S. S. and W. S. Doak .. | 24 | 63 | 8 | 19 | 42.3 | 2.10 |
| Lookout Mountain .. | Hamilton | Rev. C. F. P. Bancroft .. | 23 | 66 | 9 | 11 | 43.8 | ..... |
| Austin | Wilson | P. B. Calhoun | 16 | 70 | 5, 9 | 12 | 40.9 | 8.60 |
| Clarksville | Montgomery | Prof. Wm. M. Stuart .. | 16, 26 | 63 | 9 | 15 | 39.8 | 8.39 |
| Trenton | Gibson | W. T. Grigsby | 16 | 67 | 9 | 19 | 43.7 | 5.58 |
| Memphis | Shelby | Ed. Goldsmith | 16 | 71 | 9 | 20 | 41.7 | 4.96 |
| Averages | | | | | | | 42.0 | 5.38 |
| KENTUCKY. | | | | | | | | |
| Pine Grove | Clarke | Sam'l D. Martin, M. D. } | { 22, 23 26, 30 } | 56 | 9 | -2 | 36.0 | 9.93 |
| Danville | Boyle | O. Beatty | 30 | 64 | 9 | 2 | 41.1 | 7.29 |
| Shelby City | do | Howard Shriver | 26 | 60 | 9 | 0 | 37.7 | 8.23 |
| Near Louisville | Jefferson | Mrs. L. Young | 26 | 60 | 9 | 6 | 36.2 | 9.30 |
| Averages | | | | | | | 37.8 | 8.70 |
| OHIO. | | | | | | | | |
| Salem | Columbiana | J. E. Pollock | 17 | 60 | 9 | -2 | 32.2 | 6.05 |
| Steubenville | Jefferson | Jos. B. Doyle | 17 | 56 | 9 | 5 | 35.5 | 5.73 |
| Painesville | Lake | E. J. Ferris | 17 | 54 | 9 | 2 | 29.3 | 6.50 |
| Milnersville | Guernsey | Rev. D. Thompson | 17 | 60 | 8 | 10 | 31.0 | 3.30 |
| Cleveland | Cuyahoga | Mr. & Mrs. G. A. Hyde .. | 17 | 56 | 9 | 2 | 29.4 | 6.15 |
| Gallipolis | Gallia | I. W. James | 17 | 66 | 9 | 8 | 37.6 | 5.72 |
| Kelley's Island | Erie | Geo. C. Huntington | 22 | 46 | 9 | 4 | 29.3 | 4.95 |
| Sandusky | do | Thos. Neill | 12 | 48 | 9 | 3 | 30.5 | 7.30 |
| North Fairfield | Huron | O. Burrass | 15 | 53 | 9 | -2 | 30.7 | 5.02 |
| Gambier | Knox | Frank Compton | 17 | 49 | | | | |
| Westerville | Franklin | Prof. John Haywood .. | 17 | 50 | 9 | 1 | 31.7 | 6.05 |
| Williamsport | Pickaway | John R. Wilkinson | 25 | 50 | 9 | 6 | 34.1 | 13.35 |
| North Bass Island .. | Ottawa | Geo. R. Morton, M. D. .. | 22 | 44 | 9 | 3 | 23.1 | 5.40 |
| Marion | Marion | H. A. True, M. D. | 17, 22 | 49 | 9 | -5 | 28.9 | 7.23 |
| Hillsboro' | Highland | J. McD. Mathews | 16 | 54 | 9 | 0 | 32.1 | 6.23 |
| Toledo | Lucas | J. B. Trembley, M. D. ... | 17 | 49 | 8 | 3 | 29.0 | 4.50 |
| Bowling Green | Wood | John Clarke | 12 | 51 | 9 | 0 | 30.5 | 6.65 |
| Kenton | Hardin | C. H. Smith, M. D. | 15 | 51 | 9 | 4 | 33.8 | 8.88 |
| Urbana University .. | Champaign | M. G. Williams | 16 | 54 | 9 | -4 | 29.9 | 6.66 |
| Bethel | Clermont | Geo. W. Crane | 26 | 55 | 9 | -3 | 31.1 | 7.23 |
| Jacksonburg | Butler | I. B. Owsley, M. D. | 15, 17 | 51 | 9 | 2 | 31.7 | 6.65 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum temperature. | Date | Minimum temperature. | Mean temperature. | Rain and melted snow. |
|----------------------|-------------------|-------------------------------|------------|----------------------|--------------|----------------------|-------------------|-----------------------|
| Ohio—Continued. | | | | | | | | |
| Mt. Auburn Inst'e.. | Hamilton | | 16 | 57 | 9 | 2 | 33.4 | 6.67 |
| Cincinnati | do | R. C. Phillips | 26 | 60 | 9 | 7 | 35.4 | 6.10 |
| College Hill | do | John W. Hammitt | 26 | 52 | 9 | — 1 | 32.3 | 8.88 |
| Averages | | | | | | | 31.6 | 6.49 |
| MICHIGAN. | | | | | | | | |
| Monroe City | Monroe | Miss H. I. Whelpley .. | 12 | 47 | 9 | 0 | 23.7 | 3.36 |
| Adrian | Lenawee | J. W. Helme | 22 | 42 | 9 | — 4 | 24.7 | 5.86 |
| Alpena | Alpena | J. W. Paxton | 15, 17 | 36 | 13 | 4 | 23.7 | 2.52 |
| State Agr'l College. | Ingham | Prof. R. C. Kedzie | 17 | 46 | 9 | 2 | 25.4 | 1.93 |
| Litchfield | Hillsdale | R. Bullard | 17 | 44 | 9 | — 4 | 24.3 | 3.18 |
| Coldwater | Branch | N. L. Southworth | 12 | 46 | 9 | — 2 | 24.7 | 8.13 |
| Grand Rapids | Kent | E. S. Holmes, D. D. S. | 12, 22, 31 | 41 | 8, 9, 18, 19 | 7 | 25.0 | ..... |
| Northport | Leelenaw | Rev. Geo. N. Smith .. | 17 | 40 | 18 | 4 | 22.2 | ..... |
| Benzonía | Benzie | Wm. Wilson | 30 | 35 | 13, 14 | 3 | 22.3 | ..... |
| Homestead | do | Geo. E. Steele | 22 | 38 | 13, 14 | — 2 | 21.0 | ..... |
| Pleasanton | Manistee | J. D. Millard | 22, 28 | 38 | 13, 14 | — 1 | 20.5 | 2.75 |
| Muskegon | Muskegon | H. A. Pattison | 22 | 42 | 18 | 8 | 27.7 | ..... |
| Otsego | Allegan | Milton Chase, M. D. | 12, 22 | 50 | 9 | 12 | 33.8 | ..... |
| Copper Falls | Keewenaw | S. H. Whittlesey, M. D | 16 | 24 | 18 | — 13 | 11.2 | 8.95 |
| Ontonagon | Ontonagon | Edwin Ellis, M. D. | 25 | 32 | 18 | — 14 | 16.2 | ..... |
| Averages | | | | | | | 23.1 | 4.59 |
| INDIANA. | | | | | | | | |
| Aurora | Dearborn | Geo. Sutton, M. D. | 22 | 57 | 9 | 1 | 33.1 | 7.38 |
| Vevay | Switzerland | Chas. G. Boerner | 16 | 60 | 9 | 5 | 34.7 | 7.18 |
| Mt. Carmel | Franklin | J. A. Applegate and daughter. | 22 | 50 | 9 | 0 | 31.5 | 4.53 |
| Muncie | Delaware | G. W. H. Kemper, M. D | 22 | 53 | 9 | — 1 | 29.5 | 4.00 |
| Spiceland | Henry | Wm. Dawson | 12, 16 | 51 | 9 | — 3 | 29.7 | 5.03 |
| Laconia | Harrison | Adam Crozier | 16 | 62 | 9 | 3 | 35.4 | 6.89 |
| Columbia City | Whitley | Drs. McCoy and Maxwell. | 11 | 48 | 9 | — 4 | 27.6 | 3.10 |
| Knightstown | Rush | D. Deem | 16 | 54 | 9 | — 5 | 30.1 | 5.14 |
| Near La Porte | La Porte | F. J. Andrew | 10 | 48 | 9 | — 4 | 25.2 | 4.20 |
| Rensselaer | Jasper | J. H. Loughridge | 11 | 47 | 8, 27 | 0 | 25.6 | 3.95 |
| Lafayette | Tippecanoe | J. W. Newton | 12 | 56 | 8, 9 | 4 | 29.9 | 4.70 |
| Merom | Sullivan | Thomas Holmes | 12 | 58 | 8 | 6 | 31.7 | 4.11 |
| New Harmony | Posey | John Chappellsmith .. | 12 | 58 | 8 | 13 | 35.3 | 4.35 |
| Harveysburg | Fountain | B. C. Williams, M. D. | 22 | 58 | 9 | — 2 | 26.1 | 4.60 |
| Averages | | | | | | | 30.4 | 4.94 |
| ILLINOIS. | | | | | | | | |
| Chicago | Cook | J. G. Languth, jr | 22 | 46 | 9, 18 | 4 | 27.1 | 2.37 |
| Near Chicago | do | Sam'l Brookes | 16 | 48 | 8 | 2 | 25.6 | ..... |
| Evanston | do | Prof. Oliver Marcy | 22 | 42 | 8 | — 1 | 25.0 | 3.25 |
| Marengo | McHenry | J. W. James | 16 | 45 | 8, 18 | — 7 | 20.9 | 2.28 |
| Mattoon | Coles | W. E. Henry | 10 | 50 | 8 | 2 | 30.2 | 1.76 |
| Effingham | Effingham | W. Thompson, M. D. | 12 | 62 | 8 | 6 | 30.7 | 5.75 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum temperature. | Date. | Minimum temperature. | Mean temperature. | Rain and melted snow. |
|--------------------|-------------|------------------------------|-----------|----------------------|----------|----------------------|-------------------|-----------------------|
| ILLINOIS—Contin'd. | | | | | | | | |
| Aurora | Kane | A. Spaulding, M. D. | 11 | 45 | 8 | — 2 | 22.3 | In. |
| Louisville | Clay | D. H. Chase, M. D. | 12 | 62 | 9 | 10 | 33.0 | 4.90 |
| Golconda | Pope | Wm. V. Eldridge | 15 | 63 | 7, 9 | 16 | 39.2 | 4.50 |
| Belvidere | Boone | G. B. Moss | 16 | 43 | 18 | — 7 | 20.9 | 1.72 |
| Sandwich | De Kalb | N. E. Ballou, M. D. | 16 | 46 | 18 | — 3 | 23.4 | 4.45 |
| Ottawa | La Salle | Mrs. E. H. Merwin | 16 | 54 | 8 | 0 | 27.9 | 5.29 |
| Decatur | Macon | Timothy Dudley | 12, 16 | 56 | 8 | 3 | 27.6 | 2.85 |
| Winnebago | Winnebago | J. W. and Miss Tolman | 16 | 42 | 8, 18 | — 8 | 20.4 | 2.87 |
| Rochelle | Ogle | Dan'l Carey | 16 | 44 | 18 | — 4 | 24.1 | ..... |
| Wyanet | Bureau | E. S. and Miss I. G. Phelps. | 16 | 50 | 18 | — 3 | 25.5 | 3.30 |
| Tiskilwa | do | Verry Aldrich | 11, 16 | 48 | 18 | 0 | 25.8 | ..... |
| Hennepin | Putnam | Smiley Shepherd | 11 | 48 | 18 | — 2 | 26.0 | ..... |
| Do | do | Ethan Osborn | 11, 12 | 46 | 18 | 1 | 26.7 | 1.65 |
| Peoria | Peoria | Fred'k Brendel | 16 | 52 | 8 | 4 | 28.0 | 2.05 |
| Springfield | Sangamon | G. M. Brinkerhoff | 11 | 56 | 8 | 2 | 27.6 | ..... |
| Dubois | Washington | Wm. C. Spencer | 12 | 64 | 18 | 4 | 32.9 | 3.64 |
| South Pass | Union | H. C. Freeman | 12 | 64 | 8, 9, 18 | 12 | 34.7 | ..... |
| Galesburg | Knox | Prof. Wm. Livingston | 11 | 50 | 8, 18 | — 2 | 21.4 | 0.63 |
| Manchester | Scott | Dr. J. and C. W. Grant | 22 | 56 | 8 | 0 | 29.5 | 1.16 |
| Mt. Sterling | Brown | Rev. A. Duncan | 11 | 54 | 8 | — 2 | 26.4 | ..... |
| Andalusia | Rock Island | E. H. Bowman, M. D. | 16 | 50 | 8, 18 | 0 | 26.0 | ..... |
| Augusta | Hancock | S. B. Mead, M. D. | 5, 11 | 51 | 18 | — 2 | 26.9 | 2.12 |
| Warsaw | do | B. Whitaker | 11 | 54 | 8 | — 2 | 27.3 | 2.20 |
| Averages | | | | | | | 27.0 | 4.59 |
| WISCONSIN. | | | | | | | | |
| Plymouth | Sheboygan | G. Moeller | 22 | 40 | 18 | —11 | 19.0 | 2.10 |
| Hingham | do | John De Lyser | 22 | 40 | 18 | —10 | 19.7 | ..... |
| Milwaukee | Milwaukee | I. A. Lapham, L.L.D. | 17 | 46 | 18 | — 5 | 22.7 | 2.37 |
| Appleton | Outagamie | J. C. Foye | 16 | 42 | 18 | — 2 | 22.0 | ..... |
| Geneva | Walworth | W. H. Whiting | 22 | 41 | 8, 18 | — 6 | 22.0 | 2.10 |
| Waupacca | Waupacca | H. C. Mead | 23 | 40 | 18 | —14 | 18.9 | ..... |
| Embarrass | do | E. Everett Breed | 16, 28 | 35 | 9, 18 | — 6 | 16.1 | ..... |
| Rocky Run | Columbia | W. W. Curtis | 16 | 41 | 18 | —10 | 19.2 | 2.00 |
| Madison | Dane | W. W. Daniels | 16 | 40 | 18 | —12 | 17.8 | 3.25 |
| Edgerton | Rock | H. J. Shints | 16 | 42 | 8 | — 6 | 22.2 | 2.65 |
| Mosinee | Marathon | Jno. O'Donoghue | 16 | 36 | 18 | —25 | 11.9 | 2.31 |
| Baraboo | Sauk | M. C. Waite | 25 | 36 | 18 | —12 | 18.7 | 6.88 |
| New Lisbon | Juneau | J. L. Dungan | 24 | 46 | 18 | —18 | 17.2 | ..... |
| Bayfield | Bayfield | Andrew Tate | 3, 29, 30 | 28 | 18, 23 | —18 | 9.6 | ..... |
| Averages | | | | | | | 18.4 | 2.96 |
| MINNESOTA. | | | | | | | | |
| Afton | Washington | Dr. B.F. & Mrs. Babcock | 28 | 36 | 21 | —21 | 10.9 | 2.45 |
| St. Paul | Ramsey | Rev. A. B. Paterson | 5, 28 | 33 | 18 | —20 | 14.8 | 1.34 |
| Minneapolis | Hennepin | Wm. Cheney | 28 | 32 | 18 | —30 | 9.9 | 2.15 |
| Sibley | Sibley | C.W. & C. E. Woodbury | 28 | 36 | 23 | —20 | 9.3 | 1.53 |
| Koniska | McLeod | Thomas M. Young | 28 | 32 | 17, 23 | —24 | 10.7 | 2.05 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain and melted snow. |
|------------------------|------------------|-------------------------|--------------------|---------------------------|---------------|---------------------------|------------------------|--------------------------|
| MINNESOTA—Con'd. | | | | | | | | |
| New Ulm..... | Brown..... | Charles Roos..... | 5, 28 | 32 | 17 | —18 | 11.0 | In. 1.74 |
| Madelia..... | Watonwan..... | W. W. Murphy..... | 5 | 32 | 23 | —23 | 9.7 | 2.05 |
| Averages..... | | | | | | | 10.9 | 1.90 |
| IOWA. | | | | | | | | |
| Clinton..... | Clinton..... | Dr. J. P. Farnsworth.. | 11 | 44 | 18 | —5 | 22.1 | 4.50 |
| Waukon..... | Allamakee..... | E. M. Hancock..... | 16 | 40 | 17 | —15 | 14.4 | ..... |
| Dubuque..... | Dubuque..... | Asa Horr, M. D..... | 16 | 43 | 17 | —6 | 21.2 | 2.22 |
| Monticello..... | Jones..... | M. M. Moulton..... | 16 | 40 | 8, 17 | —10 | 18.8 | 1.35 |
| Bowen's Prairie..... | do..... | Sam'l Woodworth..... | 11 | 54 | 8, 17 | —12 | 19.9 | 4.10 |
| Ft. Madison..... | Lee..... | Dan'l McCready..... | 11 | 48 | 18 | —2 | 25.6 | 2.89 |
| Guttenberg..... | Clayton..... | Jas. P. Dickerson..... | 16 | 42 | 8 | —12 | 17.3 | ..... |
| Mt. Vernon..... | Linn..... | Prof. A. Collins..... | 16 | 40 | 17 | —6 | 21.1 | ..... |
| Iowa City..... | Johnson..... | Prof. Theo. S. Parvin.. | 16 | 44 | 8 | —5 | 22.1 | 2.30 |
| Independence..... | Buchanan..... | Geo. Warne, M. D..... | 16 | 40 | 8, 17 | —11 | 18.1 | 1.73 |
| Near Independence..... | do..... | Mrs. D. B. Wheaton.. | 16 | 43 | 8, 17 | —12 | 17.3 | 4.57 |
| Waterloo..... | Black Hawk..... | T. Steed..... | 11, 16 | 38 | 17 | —10 | 21.0 | ..... |
| Rockford..... | Floyd..... | H. Wahey..... | 16 | 39 | 17, 18, 23 | —7 | 18.9 | ..... |
| Iowa Falls..... | Hardin..... | N. Townsend..... | 11, 15, 27, 28, 29 | 38 | 16 | —8 | 20.9 | 1.18 |
| Algona..... | Kossuth..... | James H. Warren..... | 11, 28 | 33 | 17 | —13 | 15.8 | 1.80 |
| West Bend..... | Palo Alto..... | Ph. Dorweiler..... | 11 | 36 | 17 | —18 | 12.6 | 2.10 |
| Boonesboro'..... | Boone..... | E. Babcock..... | 11 | 48 | 8, 17 | —10 | 18.7 | 6.50 |
| Mineral Ridge..... | do..... | Z. S. Sullivan..... | 11 | 50 | 8, 17 | —8 | 20.5 | 0.73 |
| Fontanelle..... | Adair..... | A. F. Bryant..... | 10 | 45 | 17 | —13 | 21.4 | 0.68 |
| Rolfe..... | Pocahontas..... | Oscar I. Strong..... | 11 | 40 | 17 | —17 | 16.5 | 1.38 |
| Grant City..... | Sac..... | Mr. and Mrs. Miller... | 28 | 42 | 8, 9, 17 | —12 | 17.5 | 1.10 |
| Logan..... | Harrison..... | Jacob T. Stern..... | 10 | 49 | 17 | —11 | 19.5 | 0.90 |
| Woodbine..... | do..... | David R. Witter..... | 10 | 42 | 17 | —18 | 18.8 | 0.29 |
| West Union..... | Fayette..... | Frank McClintock..... | 10, 30 | 46 | 17 | —19 | 17.9 | 1.72 |
| Averages..... | | | | | | | 25.4 | 2.21 |
| MISSOURI. | | | | | | | | |
| St. Louis University | St. Louis..... | Rev. F. H. Stuntebeck.. | 12 | 63 | 8 | 8 | 34.7 | 2.25 |
| Allenton..... | do..... | A. Fendler, M. D..... | 12 | 64 | 8 | 6 | 32.8 | 2.31 |
| Hematite..... | Jefferson..... | Jno. M. Smith..... | 12 | 69 | 8 | 8 | 35.8 | 2.60 |
| Rolla..... | Phelps..... | Homer Ruggles..... | 16 | 64 | 17 | 8 | 34.5 | 1.18 |
| Jefferson City..... | Cole..... | Nicolas de Wyl..... | 16 | 61 | 17 | 2 | 28.0 | ..... |
| Bolivar..... | Polk..... | James A. Race..... | 11, 22, 29 | 58 | 17 | 4 | 35.5 | 0.31 |
| Harrisonville..... | Cass..... | John Christian..... | 11 | 54 | 17 | —2 | 30.2 | 0.50 |
| St. Joseph..... | Buchanan..... | Rev. H. Bullard..... | 11 | 56 | 7, 16, 17, 18 | 4 | 29.2 | ..... |
| Oregon..... | Holt..... | Wm. Kaucher..... | 10 | 55 | 17 | —8 | 26.2 | 1.00 |
| Averages..... | | | | | | | 31.9 | 1.45 |
| KANSAS. | | | | | | | | |
| Atchison..... | Atchison..... | Dr. H. B. & Miss Horn.. | 11 | 58 | 8 | —3 | 27.3 | 0.50 |
| Leavenworth..... | Leavenworth..... | Dr. J. Stayman..... | 29 | 56 | 8 | —2 | 26.3 | 0.62 |
| Olathe..... | Johnson..... | Watts Beckwith..... | 11 | 56 | 17 | —1 | 28.7 | 0.70 |
| Paola..... | Miami..... | L. D. Walrad..... | 11 | 57 | 17 | 1 | 30.2 | 0.50 |
| Baxter Springs..... | Cherokee..... | Ingraham and Hyland.. | 16 | 68 | 17 | 6 | 35.6 | 0.70 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum temperature. | Date. | Minimum temperature. | Mean temperature. | Rain and melted snow. |
|-----------------------|------------------|-------------------------|--------|----------------------|---------|----------------------|-------------------|-----------------------|
| KANSAS—Contin'd. | | | | | | | | |
| Lawrence | Douglas | Prof. F. H. Snow | 11, 29 | 57 | 8 | 0 | 29.4 | 0.67 |
| Holton | Jackson | James Watters, M. D. . | 11 | 60 | 8, 17 | — 4 | 27.2 | 0.75 |
| Neosho Falls | Woodson | Mrs. E. W. Groesbeck . | 25 | 57 | 17 | — 1 | 27.3 | 0.30 |
| Le Roy | Coffey | J. G. Shoemaker | 29 | 58 | 17 | 0 | 32.2 | 0.25 |
| State Agr. College.. | Riley | Prof. B. F. Mudge | 11, 29 | 58 | 17 | — 3 | 27.7 | 0.05 |
| Council Grove | Morris | A. Woodworth, M. D. . | 11 | 62 | 17 | 2 | 30.5 | 0.50 |
| Averages | | | | | | | 29.3 | 0.50 |
| NEBRASKA. | | | | | | | | |
| Omaha Agency | Omaha Reserve | Rev. Wm. Hamilton .. | 29 | 46 | 17 | —10 | 21.8 | 0.25 |
| Blair | Washington .. | John S. Bowen | 10 | 43 | 8 | — 9 | 20.0 | ..... |
| De Soto | do | Charles Seltz | 10 | 43 | 17 | —14 | 19.5 | 0.35 |
| Bellevue | Sarpy | Mrs. E. E. Caldwell .. | 10 | 49 | 17 | — 8 | 24.1 | 0.40 |
| Nebraska City | Otoe | J. M. Pittenger | 10 | 54 | 17 | —12 | 23.5 | 1.74 |
| Averages | | | | | | | 21.8 | 0.69 |
| UTAH TERRITORY. | | | | | | | | |
| Great Salt Lake City | Great Salt Lake | W. W. Phelps | 29, 30 | 48 | 17 | 11 | 31.7 | ..... |
| CALIFORNIA. | | | | | | | | |
| Monterey | Monterey | C. A. Canfield, M. D. . | 31 | 73 | 2, 8 | 35 | 51.0 | 1.13 |
| Chico | Butte | W. F. Cheney, M. D. . | 30 | 70 | 5 | 26 | 49.4 | 2.70 |
| Watsonville | Santa Cruz | A. J. Compton | 29, 30 | 78 | 16, 17 | 34 | 53.8 | 3.00 |
| Vacaville | Solano | Prof. J. C. Simmons . | 29 | 68 | 2 | 26 | 46.2 | 2.92 |
| Cahto | Mendocino | A. W. Thornton, M. D. . | 28, 31 | 68 | 5, 6, 9 | 33 | 48.0 | 15.00 |
| Averages | | | | | | | 49.7 | 4.75 |
| MONTANA TERRITORY | | | | | | | | |
| Deer Lodge City... | Deer Lodge... | Granville Stuart | 31 | 51 | 18 | —36 | 22.0 | 0.64 |
| WASHINGTON TERRITORY. | | | | | | | | |
| Port Angeles | Clallam | Alex. Sampson | 12 | 52 | 20 | 38 | 46.3 | 11.75 |
| Walla-Walla | Walla-Walla.. | A. H. Simmons | 30 | 64 | 18 | 2 | 35.6 | 4.41 |
| Averages | | | | | | | 41.0 | 8.08 |
| COLORADO TERRITORY. | | | | | | | | |
| Denver | Arapahoe | Wm. H. Byers | 31 | 60 | 16 | — 5 | 29.4 | 1.15 |

STATE AVERAGES FOR JANUARY.

The following table may interest many who have not leisure to examine in detail the foregoing. It exhibits the highest and lowest temperature (with dates prefixed) in each State during January, 1870, with the average temperature and rain-fall (including melted snow) of the same during the same month. The coldest day in some States was the warmest in others, and vice versa.

| State. | Date. | Highest temperature. | Date. | Lowest temperature. | Average mean temperature. | Average rain-fall. |
|----------------------------|-----------|----------------------|-------|---------------------|---------------------------|--------------------|
| | | ° | | ° | ° | In. |
| Maine | 20 | 56 | 14 | -22 | 24.2 | 6.51 |
| New Hampshire | 27 | 55 | 14 | -12 | 24.4 | 4.40 |
| Vermont | 17 | 52 | 14 | -30 | 24.1 | 4.48 |
| Massachusetts | 23 | 65 | 8 | -8 | 31.9 | 6.66 |
| Connecticut | 2, 27, 28 | 58 | 9 | -7 | 32.7 | 6.94 |
| New York | 17 | 68 | 17 | -14 | 30.2 | 4.19 |
| New Jersey | 17 | 68 | 9 | 9 | 38.2 | 3.84 |
| Pennsylvania | 17 | 65 | 9 | 1 | 35.0 | 5.03 |
| Maryland | 17 | 70 | 9 | 13 | 39.3 | 3.38 |
| Virginia | 17 | 80 | 9 | 6 | 41.8 | 3.72 |
| West Virginia | 16 | 68 | 9 | 6 | 37.8 | 3.00 |
| North Carolina | 17 | 80 | 9 | 10 | 46.4 | 4.08 |
| South Carolina | 18 | 78 | 10 | 18 | 50.1 | 4.62 |
| Georgia | 17 | 78 | 9, 10 | 15 | 48.1 | 4.11 |
| Alabama | 16 | 74 | 9 | 23 | 51.8 | 4.18 |
| Florida | 15, 17 | 84 | 5 | 29 | 59.5 | 1.72 |
| Texas | 16 | 80 | 17 | 24 | 52.9 | 1.86 |
| Mississippi | 12, 30 | 78 | 9 | 23 | 48.6 | 7.54 |
| Tennessee | 17 | 72 | 9 | 6 | 42.0 | 5.38 |
| Kentucky | 30 | 64 | 9 | -2 | 37.8 | 8.70 |
| Ohio | 17 | 66 | 9 | -5 | 31.6 | 6.94 |
| Michigan | 12, 22 | 50 | 18 | -14 | 23.1 | 4.59 |
| Indiana | 16 | 62 | 9 | -5 | 30.4 | 4.94 |
| Illinois | 15 | 68 | 8, 18 | -8 | 27.0 | 4.59 |
| Wisconsin | 17, 24 | 46 | 18 | -25 | 18.4 | 2.96 |
| Minnesota | 28 | 36 | 18 | -30 | 10.9 | 1.90 |
| Iowa | 11 | 54 | 17 | -19 | 25.4 | 2.21 |
| Missouri | 12 | 69 | 17 | -8 | 31.9 | 1.45 |
| Kansas | 16 | 68 | 8, 17 | -4 | 29.3 | 0.50 |
| Nebraska | 10 | 54 | 17 | -14 | 21.8 | 0.69 |
| California | 20, 30 | 78 | 2, 5 | 26 | 49.7 | 4.75 |
| District of Columbia | 17 | 57 | 8 | 22 | 40.6 | 2.45 |

NOTES OF THE WEATHER—JANUARY, 1870.

We omit many notices of the great gale of January 2, which extended all over the New England and middle States, into some southern States, east of the Alleghany range, and westward along the lakes into Michigan. So of the great storm of wind, rain, and snow, and electricity, of the 16th and 17th, with its great and sudden fall in temperature, extending over the northwestern, western and most southwestern States, and even into Virginia and the Carolinas. We also omit descriptions of the bright and singular lunar halos and parhelia ("sun dogs") which preceded, accompanied, or followed this storm in nearly all its course. Our limits forbid more than we have given. They are preserved for future use in the Smithsonian Institution.

Houlton, Me.—Sleighing good since December 23d, but icy till 25th; more rain than for many Januarys.

Steuben, Me.—Tornado 3d; snow gone 16th; rivers and bays clear of ice 31st.

Orono, Me.—Auroras, 3d brilliant red; 28th, 30th.

Williamsburg, Me.—Auroras, 3d bright; 30th. Snow fall 34.75 inches.

West Waterville, Me.—Auroras a. m. of 4th, brilliant; 26th, 30th. Month mild, wet, 7.44° warmer than in six years.

Gardiner, Me.—Snow, rain, hail, gale, in succession, 2d; auroras, a. m. of 3d and p. m. of 26th; splendid 4th, 5th, 27th, 28th, 30th; river closed 8th; except 24th, good sleighing 10th to 26th January; average heat for 34 years 18.21° ; this month 6.87° warmer.

Lisbon, Me.—No sleighing till 25th, and poor for lumbering.

Norway, Me.—Snow, rain, and high wind 2d; freshet 3d; auroras a. m. of 3d; bright p. m. of 3d, 26th, 30th; first good sleighing 13th. Warm open January; snows mostly ended in rain, and froze, probably injuring grass roots.

Cornishville, Me.—Very splendid aurora all night 8th. Average January heat for 41 years 17° ; this, 25.76° .

Stratford, N. H.—Warmest January in twelve years; snow-fall 36.5 inches; now 2 feet deep in woods.

Whitefield, N. H.—Snow, rain, with high wind 2d; auroras a. m. of 3d; splendid 30th.

Goffstown Center, N. H.—Auroras 1st, 2d, 26th, 28th. A warm, wet January; frost out of ground 31st.

Graftsbury, Vt.—Auroras 9th, 26th, 27th, 30th. A warm January; snows ended in rain.

Newport, Vt.—Gale night of 2d; robins seen feeding on mountain ash berries 13th; aurora 30th.

East Bethel, Vt.—Warmest January in many years; 2.5 feet of snow, and much rain.

Woodstock, Vt.—Good sleighing all January, sometimes icy, as snows often ended in hail and rain.

West Charlotte, Vt.—Damaging gale from south last night, 3d; dreadful storm 13th; first snow to cover the ground in 1870, 25th; aurora 30th.

Middlebury, Vt.—Warmest January in sixteen years; little sleighing and no ice for storing away.

Panton, Vt.—Damaging gale 2d and 3d; aurora 3d; violet in garden 4th; snow with high wind 13th; thunder-storm 17th.

Castleton, Vt.—High winds 1st and 2d; aurora and meteors 27th.

Kingston, Mass.—Splendid red aurora a. m. of 5th; no frost in ground all the month; farmers plowing.

Topsfield, Mass.—Auroras a. m. of 3d, brilliant red 8th; damp snow damaged trees 30th. Month often like April; plowing; ice only 6 inches thick; at close 9 inches; snow on ground.

Georgetown, Mass.—Auroras 2d, 3d, and 26th; 10 inches damp snow 30th. Brooks open all the month; crocus bloomed in sunny spots.

Milton, Mass.—Auroras 3d, 25th, 30th; thunder and lightning 10th.

Billerica, Mass.—Great rain-storm 2d; sparrows 24th; 12 inches snow 31st.

West Newton, Mass.—Very bright aurora 3d, light-red streamers, very dark-red flashes; northern heavens as if bathed in blood from midnight till dawn; dandelions and pansies blooming 27th.

New Bedford, Mass.—Very little snow or ice; none at close of month.

Worcester, Mass.—Heavy rain, southeast gale 2d; auroras a. m. of 3d, brilliant p. m. of 3d, 26th; willow bush blossoms 28th.

Mendon, Mass.—Auroras 4th, 5th; ground free of frost and some ponds of ice 28th.

Lunenburg, Mass.—Severe gale northwest, then southeast, ending southwest 2d and 3d; damp and drifting snow 29th. Mildest January since 1851.

Amherst, Mass.—Severe northeast snow-storm 2d; snow cylinders rolled by the wind 30th; sleighing 30th, 31st.

Middletown, Ct.—Auroras 3d, 28th; robins and blue-jays 23d. River free of ice all month.

Moriches, N. Y.—Gale from south 2d; auroras all night 2d and 3d, faint 26th. Ice but once and soon gone.

South Hartford, N. Y.—Frequent strong hot wind 17th; auroral band from northeast to southeast 18th.

Garfield's, N. Y.—High wind 2d; auroral display 29th. Very mild month; no frost in the ground.

New York City.—Auroras 1st, 3d. Snows all light and slight.

Newburg, N. Y.—Month remarkably mild, probably because solar spots are near their minimum.

Cooperstown, N. Y.—Otsego Lake closed 8th. Little snow, much rain.

Sloansville, N. Y.—Bright aurora 16th. Wheeling all winter.

North Hammond, N. Y.—Rain 2d; violent gale and snow 3d; thermometer rose from -14° to 40° (60 degrees) in 20 hours 14th, 15th. St. Lawrence River open in many places, ice poor.

Houseville, N. Y.—Snow, gale, 2d, 3d; cold snow-storm 13th; gale, rain, night of 15th.

Leyden, N. Y.—A north wind marked -14° here, but before it reached New York (where the mercury stood at 16°) the south wind drove it back and raised our temperature to 55° in 48 hours. An open sunny month; sleighing all the time; no drifts; much ice on fields and roads.

South Trenton, N. Y.—Not an unpleasant day in the month, only once below zero; no snow at close.

Depauville, N. Y.—Snow, gale from south 3d; but few days' sleighing; ten rainy days; mean temperature 5.9° above January average for six years.

Palermo, N. Y.—Distant thunder 17th. Except 1863, warmest January in seventeen years.

Nichols, N. Y.—Hard rain and southeast wind 1st, 2d. Ground bare nearly all month.

Newark Valley, N. Y.—Month mild, still, cloudy; little rain or snow.

Himrods, N. Y.—Robins 24th, 25th, 28th; aurora 28th.

Suspension Bridge, N. Y.—Sleighing 1st to 12th, 13th to 15th, and 25th to close.

Buffalo, N. Y.—Rain, furious southwest gale, two inches snow 1st, 2d, 3d; first ice on lake 8th. Month began without ice or frozen ground, and was stormy till 17th; sleighing on thirteen days.

Newark, N. J.—But one January (1858) in twenty-six years as warm; average heat 28.895° ; this is nearly 7.2° above that. The gale on 2d from southeast, south, southwest did much damage. Snows light, rains copious and much above the average.

Rio Grande, N. J.—Red aurora 3d; spring morning, birds singing, 26th.

Moorestown, N. J.—After 12th ground open; frogs 17th; dandelions 25th. Warmest January known here.

New Germantown, N. J.—Auroras 2d and 3d, 26th. Ground not frozen deeper than an inch all month.

Haddonfield, N. J.—Brilliant aurora 3d; dandelions 16th; violets 23d; yellow jasmine 26th.

Newfield, N. J.—Aurora 3d; ground frozen 4 inches 6th.

Greenwich, N. J.—Aurora 3d; dandelions 4th; chickweed 20th; frogs heard 27th.

Nyces, Pa.—Robins and crows 27th. Very mild January.

Hamilton, Pa.—Auroral lights 3d, 28th; muddy roads 8th to 28th.

Dyberry, Pa.—Aurora partly red 28th. Month 10° above average of five years.

Fallsington, Pa.—Rain, gale, 2d; auroras, 3d splendid; 26th. Ice out of Delaware; farmers plowing.

Philadelphia, Pa.—Mean temperature of January, 1858, (the warmest in eighteen years,) 40.81° ; 1870, 40.49° ; 8.75° above the January average of nineteen years.

Germantown, Pa.—Auroras 3d to 6th, and 9th; spirea in leaf, and dandelion and jasmine in flower 27th. Not one entirely clear day.

Horsham, Pa.—Snow-drops 26th. Little snow or freezing; some plowing; grain looks well.

Plymouth Meeting, Pa.—Violent wind 2d; magnificent crimson aurora 3d, faint 4th; no frozen ground after 14th.

Factoryville, Pa.—Auroras, red tinge 3d, white 26th. Little snow; mud plenty; streams open; making maple sugar.

Parkersville, Pa.—Rain, then gale, 2d; auroras, yellow, red patches, a. m. of 3d; faint p. m. of 3d.

Harrisburg, Pa.—Rain 17th, (4 of the 6 inches fell in 2 hours.) Sweet-scented honeysuckle made 2 inches growth this month.

Carlisle, Pa.—Farmers plowing from 21st to 31st.

Tioga, Pa.—Month like April; river open all month; plowing.

Williamsport, Pa.—Plowing 1st; crows 2d; wrens 21st; beautiful aurora 26th; snow 31st.

Grampian Hills, Pa.—Snow, gale 2d; thaw nearly every day 12th to 31st; ground bare 18th to 30th; snow 31st.

Franklin, Pa.—Snow, gale 2d; ground free of frost 13th. Rain on 13, snow on 11 days.

Connellsville, Pa.—Heavy rain, lightning, and thunder 17th.

Brownsville, Pa.—Tornado with lightning and thunder 17th.

Canonsburg, Pa.—Snow squalls 1st, 2d, 4th, 25th; thunder and lightning 25th.

Milford, Del.—Ice 3d, 9th, 18th; auroras 3d, 26th.

Woodlawn, Md.—Auroras a. m. of 3d; brilliant, 8th; distant thunder and lightning west 17th.

St. Inigoes, Md.—Thunder all p. m., vivid lightning 15th.

Frederick, Md.—Gale 2d; aurora a. m. 3d; hail and rain 29th.

Mt. St. Mary's, Md.—Heavy gale 2d; beautiful aurora a. m. 3d; thunder 17th.

Johnsontown, Va.—Rain and strong wind 2d; thunder shower 15th; toad 22d; peach blossoms 31st.

Hampton, Va.—Thunder-storm 15th; Babylonian willow in full leaf 31st. Not a flake of snow this month.

Zuni Station, Va.—Maple (*acer rubrum*) in bloom 26th; brilliant aurora 30th. Grass green; is this winter?

Bacon's Castle, Va.—Hard wind and rain 2d; brilliant aurora 3d; robins in gangs 9th; thunder showers 15th, 17th; daisy 21st; alder 24th. Means, January, 1868, 35.9°; 1869, 46.4°; 1870, 48.2°.

Comorn, Va.—Auroras 26th, 31st. Ice on six mornings; plowing every week; dry till 24th; last week wet.

Fairfax C. H., Va.—Lightning and thunder-storm, strong wind from southwest 17th; aurora 28th.

Vienna, Va.—Gale with rain, hail, lightning, and thunder 17th; fan-shaped aurora in northeast 18th.

Piedmont, Va.—Slight rain and snow with high wind 31st.

Piedmont Station, Va.—Blood-red sky north and northeast, then formed a perpendicular column 3d; birds singing 12th, (the wren has remained here;) blue birds 16th; plowing 22d.

Lexington, Va.—Ice three inches 10th; great thunder-storm 17th.

Lynchburg, Va.—Aurora 3d; ice three inches 10th; planted potatoes, peas (sowed 14th) coming up 24th.

Snowville, Va.—Heavy storm 1st; thunder-storm 17th.

Wytheville, Va.—Terrible snow-storm all day and night 2d, (drifts seen 31st;) thunder storm 17th.

Cabell C. H., Va.—Heavy rain, high wind, loud thunder 17th.

Altamare, N. C.—Rain and gale all day and night 2d; most magnificent aurora ever seen here, white and rosy, a. m. of 3d; thunder-storm 15th; thunder and gale 31st.

Anderson C. H., S. C.—Snow-storm 3d; furious wind and rain 17th; alder blossoms 18th. Month wet.

Gowdeysville, S. C.—Warm and pleasant 12th to 31st; clover and wheat growing finely.

Bluffton, S. C.—First snow to whiten ground in many years.

Atlanta, Ga.—Thunder and lightning S. E. 15th; thunder N. W. 24th.

Penfield, Ga.—At midnight 5th a loud roaring noise for fifteen seconds, jarred buildings, felt at points twenty miles S. W., thirty miles N. E., seventy miles S. E., and at Macon sky illuminated as by fire in N. E. The first, was it an explosion of a meteor?—the second, an aurora?

Carlowville, Ala.—Heavy thunder-storm 15th.

Pilatka, Fla.—Windy 1st, 2d; gale 3d; frosts 3d, 4th, 5th, with ice 6th; then warm to 31st. Orange, peach, and plum in blossom.

Houston, Texas.—Frost, ice 2d, 3d; auroras 3d, 26th, 27th, 28th.

Laracca, Texas.—Cold and clear 1st to 5th; heavy thunder-storm p. m. of 13th to a. m. of 14th, incessant lightning all night, melted telegraph conductors.

New Orleans, La.—Strawberries blossom 12th to 21st; summer days 24th to 31st, but nights cool.

Columbus, Miss.—Thunder-storm, high wind day and night 16th.

Marion, Miss.—Snow-storm 1st; hyacinths 11th; larks, blue birds, frogs, 13th; peach and plum blossoms 27th.

Natchez, Miss.—Heavy thunder-storms 19th, 24th. No clear days.

Elizabethton, Tenn.—First thunder-storm of 1870, 17th; robins 20th. Much plowing this month.

Austin, Tenn.—Heavy thunder-storm all night 17th; then delightful weather to 31st.

Clarksville, Tenn.—Rain and 2.75 inches snow 1st, 2d, 3d; daily rain 11th to 17th, when heavy rain, hail, and violent wind.

Trenton, Tenn.—Warm, open winter; earth very wet.

Shelby City, Ky.—Rain, then five inches snow, 1st, 2d; skating 7th; ice three to four inches 10th; heavy thunder-storm 16th; great rain and damaging gale 17th.

Pine Grove, Ky.—Rain, then eight inches snow 1st, 2d; snow all day 3d, 4th; terrific wind, rain, hail 17th. Rain and snow on eighteen days—snow-fall, fifteen inches.

Salem, Ohio.—Rain and snow on eighteen days; ground bare of snow most of January.

Steubenville, Ohio.—Snow and heavy wind 2d; thunder-storm 17th.

North Fairfield, Ohio.—Snow 1st, with strong wind 2d, eight inches deep by 3d; thunder showers 17th.

Westerville, Ohio.—Snow, then rain 1st, then severe snow-storm 2d.

North Bass Island, Ohio.—Heavy snow drifts 2d; sleet 12th; snow-fall fourteen inches, on eight days; rain on eight days.

Hillsboro, Ohio.—Rain, snow 1st; snow 2d; thunder, rain, hail 16th, 17th; two inches snow 31st.

Toledo, Ohio.—Severe snow-storm 1st, 2d; sleighing till 11th; lightning, thunder, rain 17th. Stormy month; 15.75 inches snow on eleven days; only four clear days.

Bowling Green, Ohio.—Rain 11th to 13th; then snow, sleet, and wind till 17th, when wind became a cold gale, and changed the country to fields of ice.

Urbana, Ohio.—Snow gone after ten days 13th; great storm of thunder, hail, wind 17th.

Jacksonburg, Ohio.—Bright aurora 3d; violent wind and thunder 17th; hail, rain, sleet 24th; heavy sleet 25th.

Cincinnati, Ohio.—Thunder shower 16th; thunder, wind, rain, hail, thirty minutes, overflowing sewers, &c., 17th.

College Hill, Ohio.—Magnificent aurora, red streamers, 3d; great thunder-storm all night of 16th, and sleet storm all p. m. of 17th.

Adrian, Mich.—Rain, hail 14th, (a tornado six miles south.)

Alpena, Mich.—Snow, gale 2d; beautiful auroras 8th, 26th, 30th; thunder, rain, wind 17th. Three jays and a blackbird wintering on the island.

Litchfield, Mich.—Month mild, but 4.27° colder than in 1869; little sleighing; good wheeling, grain promising.

Grand Rapids, Mich.—Fourth sleighing 8th to 17th; heavy thunder and lightning 17th.

Northport, Mich.—A long winter, pleasant month, good sleighing, no ice in the bay.

Homestead, Mich.—High northwest wind and rain last night, blustering to-day, 17th; storm continues 18th.

Muskegon, Mich.—Great thunder-storm and gale northwest to northeast 17th; very bright aurora 27th.

Copper Falls, Mich.—Month of high winds, sudden changes, and snow-fall 5 feet 9½ inches.

Aurora, Ind.—Auroras 3d, 8th; an August storm of thunder, lightning, hail, rain 17th; crows 22d; robins 23d.

Veray, Ind.—Crimson aurora 3d; thunder-storm, hail, gale 16th; woodpecker, blue-birds 28th.

Muncie, Ind.—Thunder-storm from southwest 17th.

Spiceland, Ind.—Snow all day 1st; nearly all day 2d; most of day 3d; very rainy 16th, 17th; cold-storm p. m. 17th.

Laconia, Ind.—Bright aurora 3d; thunder and lightning 16th; and rain, gale 17th.

Columbia City, Ind.—Thunder-storm 16th; heavy 17th.

Knightstown, Ind.—Heavy thunder-storm 16th; gale 17th.

La Porte, Ind.—Gale, thunder, lightning, rain 17th.

Merom, Ind.—Hail with lightning and thunder 17th.

New Harmony, Ind.—Violent gale 16th and 17th.

Chicago, Ill.—Little sunshine, rain on four and snow on seven days.

Mattoon, Ill.—Rain, snow, forked lightning, thunder night of 16th.

Effingham, Ill.—Rain, warm wind from south 16th; hail, thunder, sharp wind from west 17th. Winter wheat hurt by thaws and freezes; peach buds sound.

Aurora, Ill.—Except storm of 16th, and following cold, month mild; ground mostly bare.

Louisville, Ill.—Thunder-storm night of 16th; robins, jays, &c., 23d; wild geese fly north 27th. Wheat looks well.

Golconda, Ill.—First ice in Ohio river 11th to 14th; heavy thunder, lightning and deluge of rain 17th.

Belvidere, Ill.—Auroras 3d, 24th, 25th, 26th; lightning, thunder, some hail night of 16th; mercury fell 41° in ten hours. Good wheeling.

Ottawa, Ill.—Very heavy thunder-storm night of 16th.

Decatur, Ill.—Night of 16th, terrible thunder, lightning and wind; two storms from southwest and northwest met; the southwest barely touched here, but did great injury south of us.

Winnebago, Ill.—Rain, sleet, snow 12th, 13th; thunder-storm and gale 16th, and by 17th mercury fell 44° in nine hours; auroras 26th, 30th.

Wyandot, Ill.—Month cloudy, no heavy storms, 6° colder than in 1869, 10° warmer than in 1868, and 8° warmer than in 1867.

Peoria, Ill.—Thunder-storm, gale 16th; thermometer fell 45° in ten hours.

Dubois, Ill.—Frogs 15th, 16th; terrific thunder-storm, hail, gale, night of 16th; buzzards 27th.

South Pass, Ill.—Distant thunder 12th; freezing rain 14th; terrific thunder-storm 16th; light snow 17th.

Galesburg, Ill.—Heavy thunder-storm without high winds 17th.

Manchester, Ill.—Bright aurora 6th; violent gale and thunder-storm 16th.

Mount Sterling, Ill.—Severe thunder-storm 13th; distant lightning in south 17th.

Andalusia, Ill.—Mississippi River closed 8th; opened 10th; closed 17th; teams crossed 18th; auroral arch 27th.

Augusta, Ill.—Severe thunder, lightning, and brief rain 16th.

Plymouth, Wis.—Faint auroras 26th, 30th, 31st.

Milwaukee, Wis.—Auroras 2d, 4th, 26th, 30th; heavy rain, lightning, night of 16th.

Embarrass, Wis.—Auroras 8th, 23th; perfect arch 30th, 31st.

Rocky Run, Wis.—Auroras 3d, 26th, 27th, 30th. Much southerly wind this month.

Madison, Wis.—Lightning, rain 16th; violent southwest wind till 17th; mercury fell till a. m. 18th; an aurora 29th.

Mosinee, Wis.—Strong gale 2 a. m. 17th; auroras 28th, 29th.

Baraboo, Wis.—Mild month; mildest winter known here.

Bayfield, Wis.—Very heavy snow-storm 17th; auroras 26th, 27th, 28th. More snow this month than usual.

Minneapolis, Minn.—Drifting east snow-storm 16th, 17th.

Koniska, Minn.—River ice two feet thick 15th; worst day in my fourteen years' residence here 17th.

New Ulm, Minn.—Severe snow-storm all day 17th; snow on ground two feet 31st.

Madelia, Minn.—Great drifting snow-storm from northwest 17th.

Clinton, Iowa.—Thunder and lightning in southeast 16th; wind changed to northwest and became a cold gale 17th.

Waukon, Iowa.—Auroras 1st, 3d; brilliant 26th; air-frost all day and mercury falling 17th.

Dubuque, Iowa.—Wind blew hard all day 16th; barometer fell rapidly till on 17th.

Fort Madison, Iowa.—Gale 17th; Mississippi river frozen over 8th; distant thunder and lightning 16th; gale after midnight 17th.

Guttenberg, Iowa.—At 6.30 p. m. 16th, thermometer 45° ; at 7 a. m. 17th 6° ; range 51° in eight hours thirty minutes.

Independence, Iowa.—Terrific gale from west 7th; rain all day 16th; air full of frost 17th.

Waterloo, Iowa.—Mildest winter in many years.

Rockford, Iowa.—Snow and worst blow this winter 7th, 8th; very cold and severe gale 17th.

Algona, Iowa.—Snow 14th, 15th; then sleet with strong southeast wind till one p. m. 16th; then changed to northwest gale till sunset 17th; eight inches snow 28th, 29th, 30th. Except this, month mild and pleasant.

West Bend, Iowa.—Aurora 26th. No great storm except on 16th, 17th. Month pleasant.

Boonesboro, Iowa.—Drifting snow-squalls all day 7th; rain, snow, high wind 16th, 17th.

Mineral Ridge, Iowa.—Drifting snow from west 7th; rain, snow, high wind southwest, then cold northwest, 16th; wind west, colder, 17th.

Rolfe, Iowa.—Diffused auroras 3d, 7th, 31st.

Logan, Iowa.—Mildest January in many years; free from storms of all kinds.

West Union, Iowa.—Rain, mist, all day 16th; cold in night, gale all day 17th, and mercury fell 55° in ten hours.

St. Louis, Mo.—Rain, lightning, gale 16th; then snow 17th.

Allenton, Mo.—Thunder, lightning, hail 16th, 17th.

Rolla, Mo.—Rainy, misty 16th; thunder-storm, hail, gale 17th.

Bolivar, Mo.—Warm, balmy wind, changed to furious northwest with thunder and lightning in north, and mercury fell 34° in two hours, on 16th.

Warrensburg, Mo.—Thunder and lightning in north 15th; thermometer 64° at noon; -4° at nine p. m.; range 68° in nine hours.

St. Joseph, Mo.—Gale 16th, (fall in temperature of 50° in nine hours;) river closed 17th. Good ice secured.

Oregon, Mo.—Auroras 3d, 7th, 26th, 29th a. m., and p. m. 30th, 31st; six inches ice on Mill Creek 18th; sleighing 26th.

Leavenworth, Kan.—On the 16th at noon, temperature 50° ; at two p. m. 28° ; at eight p. m. -1° ; 51° in eight hours, killing most peach buds, as 60° sudden change, even if not below 16° , kills the peach.

Paola, Kan.—South gale, changed to southwest and west, growing cold rapidly 16th; blue-birds 31st.

Holton, Kan.—Some severe and sudden changes, but pleasant month, and wheat looks well.

Le Roy, Kan.—On 17th, seven a. m., thermometer 48° ; eleven a. m.,

54°; two p. m., 26°; nine p. m., 8°; wind changed from south into north without diminution of force.

Council Grove, Kan.—On the 16th heavy south wind changed to north and temperature fell from 56° to 24° in three minutes. Except the norther of 17th, month pleasant.

Burlington, Kan.—Early sown wheat looks well; robins, blue birds, ducks, geese plenty all winter.

Omaha Agency, Neb.—Snow, high wind, increasing cold 16th.

De Soto, Neb.—Driving rain, ending in light drifting snow, 16th.

Bellerue, Neb.—Brilliant aurora 3d; sudden change from warm to cold, with furious wind, 16th.

Nebraska City, Neb.—River ice fifteen inches thick 22d; wild geese flying north 24th.

Harrisburg, Utah Ter.—Ground frozen four inches 11th. First half of month colder than in five years; little rain or snow, weather pleasant.

Chico, Cal.—Frosts on nine nights before 16th; growing weather since.

Watsonville, Cal.—More frost and less rain than usual, but grain growing finely.

Vacaville, Cal.—A drought feared in south California.

Cahto, Cal.—Slight hail and snow 15th; frogs, manganito blossoms, native bulbs shooting 31st.

Deer Lodge City, Montana Ter.—Faint auroras 2d, 3d, 29th; ice out of rivers, and frost nearly out of ground 31st. Warmest January known here; no thunder in it.

Walla-Walla, Wash'n Ter.—Ground frozen nine inches 18th; frost out of ground 25th; buds swelling, buttercup in bloom 29th.

MONTHLY REPORT

OF

THE DEPARTMENT OF AGRICULTURE,



MARCH AND APRIL,

1870.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1870.

MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE, STATISTICAL DIVISION,
Washington, D. C., April 30, 1870.

SIR: I herewith submit for publication the monthly report of this division for the months of March and April, including a digest of the returns on the condition of winter grains, the condition of farm stock, and the diseases of farm stock during the past year, with extracts from correspondence and articles upon the following topics: agricultural imports of Great Britain; Beet-root sugar; profits of steam-plowing; farming in Aroostook County, Maine; fat steers in New York; the Upper Arkansas Valley; commercial fertilizers in Connecticut; agricultural imports of 1869; exports of Odessa; pomology of Wurtemberg; international exhibition in the Netherlands; cattle plague in Europe; scientific notes on natural history; meteorological tables and notes for February and March, &c.

J. R. DODGE,
Statistician.

Hon. HORACE CAPRON,
Commissioner.

CONDITION OF WINTER GRAIN.

The April returns relative to the appearance of winter wheat and rye and other cereals are very complete, and represent every section of the country in which the crops are grown. They picture a small and slow growth, thinned in places by winter-killing, weak and unthrifty in spots from loss of vitality by long exposure under ice or to freezing winds; but, with these exceptions, vigorous, of good color, and ready to start, under the influence of a genial spring, into luxuriant and healthful growth. These blemishes are neither general nor very marked in localities where they appear, with occasional exceptions of severe freezing. While the appearance of wheat is by no means as promising as it was last year, the difference is due more to backwardness of growth, caused by late planting followed by an early winter, which allowed of little more than germination before cold weather set in, than to injuries from freezing. The mild weather and light snows of the winter-wheat region were accompanied with few sudden changes in the earlier winter months, while the colder and rougher weather of later winter was attended with heavier snows, which furnished valuable protection at a critical season.

The regular returns were prepared about the first of April. The tenor of later information gives assurance of a general and rapid amelioration, which may yet result, the season favoring, in a fine crop of winter wheat.

New England.—In the northern part of New England, on the first of April, the winter grain was lying under two feet of snow; another month will better determine how it endures the vicissitudes of early spring. The winter, to that date, had been generally favorable, moderate, and uniform in temperature. In Sagadahoc County, Maine, it was deemed a hard winter for wheat and rye, the protection not being sufficient. In Rockingham, New Hampshire, where the snow had disappeared, the fields were green and promising. In the northern counties of this State, where fall-sowing is scarcely practiced at all, wheat and rye, so far as can be judged, are in excellent condition. The same remark is generally true of Vermont and the southern portion of New England. In only one of the counties of Vermont, Windsor, fears are expressed of injury from icy and insufficient covering of the tender plants. In one county of Connecticut, New Haven, it is understood that some loss had occurred from the open winter; in Tolland the condition of wheat and rye is deemed decidedly better than last year. It should be remembered that these remarks refer to a small area, as New England produces but a small quantity of cereals, and mostly spring grain.

New York.—In more than half the counties a favorable view is taken of the prospect for a crop. In Suffolk, Alleghany, Schuyler, and Cattaraugus the fields are below an average in condition; "backward" in Queens; an "unfavorable winter" in Oneida; "winter-killed" in Chautauqua; "suffered for want of snow" in Westchester; "injured by freezing and thawing" in Genesee; injured in Monroe; an average condition is reported in Dutchess; in Ulster, Rockland, and Steuben it is in "good" condition; "as good as can be" in Rensselaer; "looked well last fall and winter favorable" in Jefferson; "looks well" in Onondaga; "very well" in Kings; and reports of varying tenor come likewise from other counties. It is reported from Columbia that one-sixth of all the tilled land is in rye.

New Jersey.—More than half of the reports from this State are favorable. It was dry during seeding time; cold weather came early, and the winter was changeable, but the extremes of temperature have not been very great, nor the winter-killing either general or disastrously severe. In Union winter grain has been killed to some extent; in Morris and in Sussex injury occurred from freezing and thawing; in Camden and in Salem its condition is below an average; in Hunterdon the drought in the fall, and changeable weather since, have produced some injury; an average condition is reported in Essex, Atlantic, and in Burlington; wheat is a good stand in Bergen, Gloucester, and in Cape May, particularly if early sown; it looks well in Mercer, "but thin owing to drought;" and equally well in Warren. On the whole, circumstances have favored the somewhat unpropitious start in the fall, as the early winter was moderate and favorable, and when freezing and thawing weather came, in the latter part of the season, the surface was generally well protected by snow. Toward the coast, as in Ocean County, this protection was not sufficient; neither winter wheat nor rye looks as well as it did six weeks ago. "The spring has been cold and backward; the young blades are shriveled and jagged. They need the reviving influence of warm, pleasant days and sunshine to change the aspect of our winter-grain fields."

Pennsylvania.—In more than half the counties reported the condition of wheat and rye is placed below the average, not so much from winter-killing as from late germination and unfavorable conditions for growth before winter set in. Injury from freezing and thawing is reported in Chester, Dauphin, Adams, York, Greene, McKean, and Warren; in the latter county, the necessity for draining as a means of exemption from

such injuries is reported. It is significantly hinted by the Montgomery reporter that wheat looks well where it was put in well. It is also noticeable that it is not injured in limestone districts, while in poorer slate soils and in low lands it is more or less winter-killed. While it is not so good as usual in Mercer, there appears to have been more than usual sown. It presents a fair appearance in Clearfield, Elk, and Franklin; is "unusually fine" in Fayette; fine in Indiana; late, though not an average, in Westmoreland and Somerset; winter-killed in Cumberland; thin and poor in Armstrong, Lancaster, Lebanon, Beaver, Erie, Forest, Lehigh, and Lawrence.

Delaware.—Wheat was sown late, much of it upon corn stubble, according to prevailing practice, and obtained small growth before winter, yet it looks well. Some injury from freezing and thawing is reported in New Castle.

Maryland.—Wheat is backward and thin in Montgomery, Howard, Harford, and Kent. It "begins to grow and look healthy" in Washington; it is "small but healthy" in Baltimore; late, though "some fields look well," in Cecil; "good" in Prince George's; "excellent" in Anne Arundel; "looks well in well-drained fields" in Queen Anne. In some level clay soils the plant was drowned or frozen out; a smaller quantity of fertilizers than usual has affected growth in many places; and the cold autumn was a disadvantage that was general.

Virginia.—Forty-two counties in this State report upon the condition of winter grain. The general tenor of returns is favorable. A condition "below an average" is given in Montgomery, Lancaster, Albemarle, Patrick, Cumberland, Greene, Henry, and Loudon. As in other States, the words, "good where fertilized," attest the necessity of manuring; and it is equally true in this region that "drilled wheat is good, broadcast poor." The Clarke correspondent says that since the introduction of the drill he has never observed so marked a difference. The plant is weak in Rockbridge, "but will improve with good weather." Twenty per cent. is reported winter-killed in Patrick, ten per cent. in Northampton, and to some extent in Fairfax. In Nelson the soil was badly prepared, and the prospect is not promising; in Tazewell wheat is not so good as last year; in Bath "worse than for years;" "not so forward" in Washington; while in Pulaski "it is as good as could be expected." An average condition appears in Botetourt, Bland, Middlesex, King George, King William, York, Smyth, and Lee. "It is better than last year" in Northampton; "better than usual" in Wayne; "very promising" in Roanoke; "in fine condition" in Scott; "looking well" in Gloucester; "remarkably well" in Highland; "very finely" in Henrico; and "in excellent condition" in Buckingham. In the latter county it was seeded late, and much of the land was hurriedly and badly prepared. Many of the counties of Virginia could give the report received from Spottsylvania: "the wheat crop was put in late last fall and made a poor show up to the first of January, but the very mild weather in January gave it such a start that it now presents a finer appearance than for many years."

North Carolina.—But four of forty-two counties making returns represent the condition of wheat below an average, viz: Bertie, Gaston, Jackson, and Randolph. Among the counties in which winter cereals "look well," or appear to be in an average or "good" condition, are Alexander, Beaufort, Chowan, Camden, Currituck, Davidson, Franklin, Guilford, Granville, Gates, Harnett, Macon, Mecklenburg, Moore, Surry, Stokes, and Yadkin. It is reported "promising" in Burke, Caswell, Duplin, Person, and Wake. It is better than usual in Montgomery, Rowan,

Perquimans, Rutherford, Stanley, and Wilkes; "very fine" in Orange; "better than for years" in Columbia and in Chatham; over an average in Greene; never better in Madison and in Sampson, and one-third more grown; and favorable returns come from Martin, Lenoir, and Greene.

South Carolina.—Wheat has an unpromising appearance in Lexington and York; looks well in Abbeville; very well in Marion and Orangeburg; unusually fine in Greenville; nearly fifty per cent. better than an average in Spartanburg; promising in manured clay lands in Newburg; better than usual in Williamsburg; and shows a good color in Richland.

Georgia.—Forty counties in Georgia have made reports of the condition of winter grain, of which but six represent the crop as unpropitious in appearance, viz: Clayton, Chattanooga, Macon, Meriwether, Laurens, and Towns. As elsewhere, there is much that is small but healthy and standing well. There is some evidence of winter-killing in places, and a diminished area in others, in consequence of the expense of fertilizers, as in Hancock, is indicated, while in Decatur more than usual was sown. In Murray it was as "good as for ten years past;" in Columbia "better than for years." The crop generally appears "promising," "better than usual," or "an average," as in Butts, Bartow, Coweta, Cobb, Decatur, Effingham, Fulton, Floyd, Gilmer, Greene, Heard, Johnson, Newton, Oglethorpe, Pike, Pulaski, Putnam, Pickens, Richmond, Stewart, Sumter, Taylor, Talbot, Terrell, Troup, Walton, and Walker. The correspondent in Carroll County says: "On account of the cold and wet winter in March, the wheat, as a general thing, looks poor and backward; but the Tappahannock wheat, obtained from the Department of Agriculture, so far excels all other kinds that it will eventually be the only kind sown."

Alabama.—This State is less extensively engaged in wheat-growing than Georgia. In most of the counties the business is almost unknown. The little that is sown looks well, with few exceptions; wheat is backward on account of cold weather in Jefferson, poor in Lawrence County, but better than for many years in Perry; a good stand of small plants in St. Clair, and presenting a fair appearance in Butler, Clay, Etowah, Sumter, and Tallapoosa.

Mississippi.—Less than usual has been sown in Mississippi, and few counties regard it as one of their industries. In Neshoba the crop has an unpromising appearance, and in Carroll it looks worse than usual, while in Attala, De Soto, Kemper, Lafayette, Rankin, and Winston a fair appearance is presented.

Louisiana produces scarcely wheat enough to permit a mention of its appearance.

Arkansas.—The crop generally looks well, where found at all. A greater breadth than usual was sown in Washington; a smaller area in Columbia. With some variety, a fair average is reported from most of the counties in which wheat is grown.

Texas.—There appears to be little disposition to produce wheat where cotton can be grown. Though the northern portion of Texas is admirably adapted to this cereal, it is comparatively little grown at present. Drought interfered with its growth in many places where sown; it is noted as below an average in Anderson and Gillespie and Forsyth; while in Travis it was better than for years; in Coryell above an average, and looking well in Blanco, Ellis, Gillespie, Lamar, Red River, and Rusk.

Tennessee.—There are few counties in Tennessee unable to give a favorable account of the winter grain, and among these are Dyer, Fayette, and Greene. In Sumner winter rye looks well, though the wheat

is poor ; it is late and somewhat thin in Weakley ; in Sullivan, though small, it stands well ; is backward, with a good stand, in Montgomery and in Robertson ; and is "decidedly good" in Sevier, and "excellent" in Williamson. Among the counties where "above the average" is reported, or a fine stand, are Anderson, Campbell, Davidson, Dyer, Hawkins, Jefferson, Lauderdale, Monroe, Obion, Polk, Rhea, Smith, and Union.

Kentucky.—More than forty counties are reported, in this State, favorably, with few exceptions, as in Butler, Calloway, McCracken, Gallatin, and Livingston, where some complaints of winter-killing are made, and in Trimble, where it is "not so good as last year." In Carroll the plant looks well, except in unfavorable situations, where it was injured by freezing, as it was to some extent in Graves, where sown among corn, according to the negligent mode more or less prevalent in the Ohio Valley. It appears "better than for several years" in Henry ; "better than for five or six years" in Anderson ; "never better" in Jackson and in Russell ; "unusually promising" in Hardin, Sherman, and Johnson. In the following counties the condition is placed at above an average : Christian, Jefferson, Fayette, Metcalf, Marion, Shelby, Oldham, Rockcastle, Clark, Clay, Laurel, Scott, Warren, Lincoln, Nelson, Owen, Kenton, Hopkins, Greenup, Herkimer, Pulaski, Whitley, Ohio, Meade, and Boone.

West Virginia.—Sowing was generally late, cold weather came early, and the growth made was small, and in places weak ; and winter-killing resulted to some extent. A backward and an inferior appearance was noted in Morgan, Pocahontas, Raleigh, Hardy, Brooke, Hancock, Putnam, and Tucker. A poor start but healthy condition is reported from Harrison ; a fair prospect is seen in Hardy, while in the mountain county, Pendleton, wheat never looked better. Fields early sown usually look well. Winter grain generally appears well in Boone, Barbour, Braxton, Berkeley, Cabell, Jackson, Jefferson, Hardy, Kanawha, Lewis, Lincoln, Morgan, Mason, Marshall, Preston, Ohio, Tucker, and Tyler.

Ohio.—A majority of the counties reporting represent wheat and rye as unpromising in appearance, below an average, or "not so good as last year." Still the reports do not indicate disastrous winter-killing, which would render impossible a good crop. Much of the injury mentioned is like that in Butler, of which John M. Millikin says : "Wheat does not look unpromising. It is injured slightly, as in former years." In Medina, where it was much frozen, dry uplands look well ; a disposition to plow up wheat fields seems to exist in Mercer and in other counties, as in Miami, Clermont, and Montgomery ; the loss from freezing did not occur till March. One cause of inferior condition was late sowing, as the early sown almost invariably appears well. The season was extremely unpropitious for seeding and early growth ; very wet weather prevailed in southern Ohio early last summer ; later a severe drought rendered the soil extremely hard, and plowing difficult and late, giving no time for seeding till October, when cold weather shortly set in, in some instances before germination had visibly progressed. It is also noted here, as elsewhere, that drilling, generally, insured a good stand ; in Morrow "drilled wheat looks one hundred per cent. better than sown." The plant did not come up well in Defiance ; and in Hardin that which was covered light was lost by sprouting and drying, or "damping off." But half a stand is reported in Shelby ; and in Marion, as is claimed, it has not been worse in ten years. Other counties making comparatively unfavorable returns are Athens, Berg, Carroll, Columbiana, Clinton, Coshocton, Drake, Green, Huron, Lawrence, Lorain,

Logan, Ottawa, Portage, Putnam, Tuscarawas, Union, Washington, Williams, Wayne, and Wyandot. Though injured in Fayette, it looks well; it is thin in Auglaize, but healthy; injured in Geauga, but the spring has been favorable; damaged somewhat by fly and frost in Fairfield, but looking well; above the average in Warren, but not so good as last year; small, but not winter-killed, in Lucas; looks well in Champaign, except that which was late sown. While much complaint is made, the injury is generally of such a character as to be remedied by the favorable weather in April and May; and later reports indicate that April has brought much of recuperation in its genial weather.

Michigan.—A majority of the counties of Michigan report favorably. Several experienced the effects of freezing and thawing weather, of ice on flat, bare surface, and the disadvantage of late sowing was quite general. The worst winter-killing appears in Montcalm, Barry, Hillsdale, Van Buren, Calhoun, and Livingston; and in Oakland, "the poorest show for thirty years." It is reported small but healthy in Lapeer, Genesee, Tuscola, Antrim, and Jackson. It is represented in excellent condition in Leelenaw, and makes a good appearance in Sanilac, Alpena, Monroe, Calhoun, Cass, and Macomb. On the first of April it was covered with snow in many sections; in Emmet, to the depth of three feet.

Indiana.—A general return from this State indicates a condition below the average in a majority of the counties. Defective stands, from freezing and other causes, to the extent of one to three-tenths, are frequent; and "poor," "much winter-killed," "not so good as usual," and similar expressions, characterize twenty to thirty of the returns. Injury by a "grub worm" is noted in Union; and "injured in the fall, not winter-killed," is reported from Kosciusko. In Fayette, where the condition of wheat is unfavorable, it "is not so bad as in 1868." Wheat looks well on rich sandy loam in Warsaw, and is poor on clay soil. It is "better than last year" in Spencer, and better than was expected in Pike. On the whole, the injuries are mainly such as are reparable by due proportions of rain and showers during the spring months. The Warren correspondent says: "In the spring of 1864 the appearance was most unfavorable up to the 1st of May, and that year we had the best wheat crop that I have seen during a residence of over forty years in this neighborhood."

Illinois.—The planting was late, the ground, too, generally badly prepared, germination, therefore, irregular, and the winter coming earlier than usual, a poor show of weak plants too often resulted. Under such circumstances, the freezing and thawing of a comparatively open winter was somewhat disastrous. Yet there were farmers who got in their winter grain early on well-prepared land, and some of them upon soil well drained, either naturally or by artificial means, and the result, despite the changes of an open winter, was seen in green and vigorous wheat. Fields that were manured were also exempt from the ravages of the frost king. These suggestive facts appear year by year, and it is a pity that such hints are not more generally taken by the farmers. Among the counties in which wheat is unfavorably reported are Green, Madison, Gallatin, Peoria, Adams, Crawford, Edwards, Tazewell, Hancock, Kendall, Marion, Clay, Effingham, Fulton, Macoupin, Pope, Sangamon, Schuyler, Tuscola, Grundy, Knox, Menard, Randolph, St. Clair, Wayne, Vermillion, and Clinton. In many of these counties later reports indicate an improving condition, and they may yet yield an average crop. In Pike County wheat is fine on new lands and bottoms; in Pope, good on fresh land or manured fields. The best farmers prophesy an improving prospect as spring advances. One correspondent refers to his expe

rience, showing that some of the largest crops produced were from late and partially winter-killed fields. One writes as follows: "Winter wheat has looked very badly indeed until within the last four weeks, during which time it has improved remarkably. Many farmers, in answer to my inquiries concerning wheat, have assured me that no correct opinion could be formed concerning it till the spring was fully opened. The prospect is now decidedly encouraging for an average crop."

Doctor G. L. Owen, writing from Williamson, says :

I am sorry to have to report the condition of winter wheat as being on the whole very unpromising. On land not exhausted by incessant cropping, and where the seed was sown by the 20th of September, wheat looks nearly as well as in average years; but on worn out soils, and on flat, undrained lands, the prospect is gloomy. There is, however, a great breadth of land sown, and we expect to make up in number of acres what we lose in fertility of soil. The fact is, until farmers understand how to cultivate winter wheat better than the majority do at present, or until a better system is adopted than is generally practiced, it is in vain to expect good crops of wheat; for we shall continually be disappointed. Year after year farmers sow wheat, and year after year a great many fail, or only succeed in raising small crops, say from six to ten bushels per acre; always and persistently attributing their failure to any and everything rather than to its true cause. When will farmers learn that the wheat plant cannot grow and yield sound grain in a soil exhausted of all those elements which are essentially necessary to its healthy growth; for such is already the condition of most of our lands that have been in cultivation for the last fifteen or twenty years. Incessant cropping with corn, wheat, and oats, to the exhaustion of the grasses, and the annual burning of the straw, have already done their work of destruction; and farmers are wanting to sell their worn-out lands to remove further West, again to carry on the same system of cropping and exhaustion by which they have been enabled to despoil so many valuable acres of God's creation.

The cultivation of the grasses, including clover, combined with the rotation of crops, are the only means whereby the farmers of this portion of Illinois can improve their lands in a reasonable time. All the manure we can make upon our farms amounts to very little in comparison to the benefit our lands would derive from a judicious rotation of crops, aided by the cultivation of the grasses. But for the want of a more practical knowledge of this subject, a great many fail in their attempts to carry out some system. Allow me to suggest the following system of rotation as peculiarly applicable to this portion of Illinois, premising that no system of rotation will be generally adopted that does not admit of the cultivation of double the amount of Indian corn to any other one product. In the first place, a farm should be divided into several fields, of as near an equal size as possible. The fields should be numbered one, two, three, and so on. Beginning with corn, the first and second fields should contain corn; the third field should rest in fallow, and be sown to winter wheat by the 20th of September. After the wheat is harvested, the ground should be properly prepared and sown with eight quarts of timothy to the acre, not later than the 15th of September. About the middle of March following four quarts of clover seed to the acre should be sown and carefully rolled in. The following summer a good crop of timothy hay may be reasonably expected. A second crop of timothy and clover may be cut the second summer; afterward the field may be pastured one or more years, according to the number of fields the farm is divided into, when it may be thoroughly plowed in the fall, inverting the sod, preparatory to being again planted to corn the following spring.

Wisconsin.—Very little winter grain is sown in this State. The returns concerning that little are favorable, without exception—the early sown being particularly fine. The correspondent for Fond du Lac County makes the following suggestions:

Heretofore the West has had poor crops after a wet season. Last summer and fall was very wet up to the commencement of winter. Snow came on with just frost enough to retain the moisture. What little frost there was was soon drawn out by the snow, of which we had in all three feet and ten inches, intermixed with nearly three and a half inches of rain. The snow has melted away gradually, but nearly all the water remains in the soil, so that it is saturated to its utmost capacity. The spring must be late. Then, again, only about two-thirds of the plowing was done last fall, which makes the sowing still later. Wheat and oats do very poorly on spring plowing. And, again, the extremely low price of wheat will cause many acres to lie idle. Money is scarce to employ help to perform labor, with the prospect of not getting our money back. And, again, farmers are changing from every branch of agriculture to cheesemaking. Not less than ten cheese factories are growing up in our county, in addition to the eight already in existence. All these considerations suggest that it would be well not to waste or part with our large surplus of wheat at prices less than cost.

Minnesota has too little winter grain to render necessary a special report.

Iowa has scarcely a tenth of her wheat area occupied by the winter variety. Little complaint is made of winter-killing or low condition, and an average prospect appears to be indicated.

Missouri.—In many of the counties reported wheat is looking well. Some complaint of freezing is made. In Lewis three-fourths is killed; in Vernon it is badly frozen out, except where sown early on prairie sod; in Taney, injured by freezing in February and March; there is some injury in Howard, but there is a sufficient stand; in Benton the earth was parched and cracked at sowing, and much of the grain failed to germinate, and it is looking badly. With advancing spring the appearance of fields has greatly improved. There was not so much wheat sown last fall as usual in Lincoln County. "On the first of January it looked moderately well; but alternate freezing and thawing have greatly injured it in prairie sections of the county. It also looks badly on timber land, but under favorable circumstances it may yield a good crop." In some prairie fields the wind blew the soil away and exposed the roots. The Hessian fly did some damage in places. Our Cape Girardeau County correspondent says: "Our winter wheat and rye is coming out nicely. A few weeks ago you could scarcely see any wheat in the fields at a hundred yards' distance, but now they look green and very well covered. The present condition is nearly as good as at the same date last year, and much better than the year previous." In Moniteau County, Missouri, winter wheat has looked badly, and farmers were much discouraged about it until within the 20th of March. The winter was long and dry, with little snow, but warm showers are now bringing it out. In St. Genevieve County, Missouri, wheat put in with drill is about as good as usual, but that sowed broadcast is hardly so good.

Kansas.—No State sends more cheering returns than Kansas. Scarcely a complaint appears from any county. Miami has "every reason to expect a bountiful harvest." In Johnson wheat and rye are fine because put in early and almost universally drilled. A great breadth is reported from Linn, "and the growth is very fine." "Not an acre of wheat or rye has been winter-killed" in Sabine, though the plants are not so well grown as last year on account of the dry weather. "Both wheat and rye stand strong and have a vigorous look" in Jefferson, "though there has been no rain for four months, and very little snow." From Franklin it is reported that "there are more good fields of wheat than last year; farms sowed earlier, and the drill is more generally used." In Butler it is said that wheat is suffering from dry weather, no rain having fallen since September last. It is noted in Shawnee that drilled wheat looks much better than sowed. Similar statements are made by other correspondents.

Nebraska.—Winter wheat is little sown in Nebraska. It appears, wherever found, to be in good condition. In Nemaha the abundance of grasshoppers prevented sowing.

California.—The prospect is fine for another good crop in this great wheat-growing State. A comparatively dry winter was feared, but a sufficient rain-fall for a good crop has been enjoyed. In San Joaquin "late rains have saved the crop." In Sacramento it is "much better than last year." In Yuba it "was never better." In Eldorado wheat is fifty per cent. better than usual; barley coming to a head. One-third better than last year in Plumas. In Mendocino it promises to be the best crop ever had: while in Monterey and San Luis Obispo the appearance of wheat is backward and poor.

Oregon.—The returns (which are few from Oregon and irregular in transmission, owing to lack of prompt mail facilities) are generally favorable. Several counties reporting appear to grow little winter wheat. The correspondent for Douglas says: "Winter wheat is in excellent condition where the land is naturally drained, as there is no artificial draining in this county; but on flat, heavy lands, it is drowned out to some extent. I am not aware of any rye being raised in this county this year." The correspondent for Linn County says: "Wheat is at least in ten per cent. better condition than last year. Rye there is none. The months of February, March, and April, up to this writing, have been unusually wet; so much so that no plowing worth naming has been done. The spring sowing must of necessity be late and probably limited."

The Territories.—Where grown the prospect is generally favorable. In Montana spring wheat is generally a more certain crop, though the winter variety at present looks well. It is looking well in Washington Territory. In Utah reports are not uniform, but generally favorable. Correspondents say that winter wheat makes light straw and heavy grain there. Spring wheat *vice versa*.

CONDITION OF FARM STOCK.

The mildness of the winter has been favorable to the health of farm animals, in exemption from the exposure of violent storms and the extremes of temperature, and rendering necessary a smaller consumption of hay and other feed. A very large crop of hay was secured last season, and its excessive production was quite general; the principal exception in quantity being in the drought-parched regions of the Atlantic coast, (the southern portions of which save very little in any season,) and the marked exception in quality, as in that portion of the West which suffered from excessive rain, in the season of growth, as well as curing. Abundance of provender is found to have more to do with good condition of stock than mildness of weather merely.

As heretofore, it is found that the cattle of the more Northern States are in better order than those of the central or southern belts, simply because they are better sheltered and protected from exposure; they are also better fed than those of portions of the central and of nearly all of the Southern States.

No cattle in the country are in a more healthy condition to-day than those of Maine and of Minnesota, and those of New Hampshire, Vermont, Michigan, and Wisconsin, are unsurpassed in that respect by those of any States south of them. They are not only sheltered, cared for, and fed with regularity, but the uniformity of the winter is a stimulant to appetite and conducive to health. In the latitude of the Ohio Valley, cold and warm seasons, snow storms and thaws, ice and mud, are endured in turn, and cattle that are ordinarily very comfortable in the open fields, or in the lee of a straw-stack, are left to stand in pools and mire, or to buffet storms of sleet and biting cold, for many days in every winter. Further south, where the friendly forest furnishes the usual protection, and the green cane-brake both food and shelter, cattle are left entirely to the resources of natural production, and to the protection of the elements. The result is, in exceptionable seasons, and with a surplus of pasturage, fine condition; but, as a rule, owing to deficient forage at some portion of the winter, or to a cold storm of rain

and sleet, or a protracted norther, suffering is experienced, the flesh reduced, and vitality impaired. In proportion as nature is kind, man thus becomes cruel; if his kindly services may, in part, be dispensed with, he becomes totally negligent, and inflicts upon his own pocket losses proportionate to the measure of his own inhumanity and to the sufferings of the dumb creatures that minister to his wants.

A large crop of excellent hay well grown and cured without damage, in the *New England States*, aided by the mild winter weather, has kept the cattle of that region in excellent condition. The reports are all of this tenor, without exceptions sufficiently marked to require notice. The remark of the correspondent of Hillsborough County: "I never knew hay to spend better," is generally applicable; and equally true the suggestion from Coos, that "If there is any trouble with stock, it must be from neglect." "Never looked better," is a common report. A statement from Piscataquis, Maine, giving, as one cause of superior condition, the acknowledged fact that "farmers generally take better care of stock than formerly in this county," has, properly, a more general application.

In the *Middle States* farm stock wintered extremely well. A "surplus of fodder" is reported in many places; "plenty of clover and other hay;" "cattle scarce and fodder plenty." In Hunterdon County, New Jersey, hay was gathered late, with less of nutriment than usual, and the consequence was perceptible in reduced flesh of farm animals. In Warren, Pennsylvania, the crop, though abundant, was also somewhat injured; but adverse returns are rare exceptions.

Stock did well in *Maryland*, generally; to some extent the changeable and stormy weather of March told upon unhoused stock. It is noticed in Baltimore County that cattle are thinner than usual.

Virginia.—Small provision is made for winter supplies of stock in this State. Hay, corn, and fodder are fed to a considerable extent; but most of the sheep, and large numbers of cattle, are left to find their own forage. In Louisa County, according to the returns, "the winter was so warm that the grass scarcely died down, and remained green in many places all the year." "Very many passed the winter in the fields" in Amelia; and in Bath cattle were pastured in the open fields, but are in low condition on account of cold and wet weather. The correspondent from York says: "Cattle are poor, as is always the case in this region, where no hay is raised." In Highland they are "more thrifty than for years;" and the explanatory remark is added "the hay crop is good." Cumberland, Patrick, Clarke, and Smythe make, comparatively, unfavorable reports.

North Carolina furnishes less favorable returns than Virginia. While cattle are thin and poor, quite too generally, it is gratifying to note exceptions, such as the following, in Stanley: "In better condition than usual, from the introduction of clover lots and meadows."

South Carolina.—In Marion County "cattle have suffered severely from last year's failure of crops; are very poor; large numbers may die before the woods afford sufficient pasture."

In *Georgia*, the drought of last season reduced both summer and winter supplies, which were supplemented, to some extent, by increased stores of cotton-seed. The latter part of winter was cold, increasing the discomfort and sufferings of farm animals. Scarcely an average condition of stock can, therefore, be claimed in this State. The Carroll correspondent says: "Owing to the cold, wet winter, and spring so far, cattle are in a very poor condition. Grass and vegetation are almost one month later."

Alabama.—The cattle in this State are generally reported in poor condition. The “short commons” resulting from drought last summer, and the cold and wet weather of the latter part of winter, have left farm animals more unthrifty than unusual. An exception is named in Butler, where “milch cows are taken care of.”

Similar reports come from *Mississippi*, mollified by a few exceptional statements, as in Washington and the regions of the Mississippi bottoms.

Louisiana makes returns of average condition for the spring season. “Cows kept for milking, and regularly fed, look well.”

From *Texas* returns are favorable, with very few exceptions; “unusually good” is a common report. In De Witt “many are fat enough for beef.” The Medina correspondent says, “Several good rains in November gave the grass a new start before winter set in, the latter part of December, affording a better winter feed than usual; the winter has, besides, been mild and short. Cattle came out of winter quarters in a somewhat better condition than an average.”

Arkansas and *Tennessee* send conflicting reports. In some places scarcity of fodder is mentioned, and the fact is noted that cattle are in a poor condition; in other sections there is abundance, and cattle nearly fat enough for beef. A fair average may be assumed.

Sheep have generally wintered better than cattle throughout the Southern States; they accept a greater variety of food, and will often grow fat where neat cattle will starve.

Kentucky reports her stock in average condition.

In *West Virginia* stock generally looks well. A few exceptions are noted. In Berkley, their poor condition is attributed to moldy corn-fodder; in Jefferson, to scarce pasturage in consequence of drought. The following, from the mountain county of Pendleton, speaks well for the capabilities of this State: “Cattle have come out of winter quarters in fine condition. I have wintered one hundred head of stock cattle, and have never known them to come out better. Cattle are our great resource; everybody handles more or less cattle.” In Boone, “sheep have generally run at large in the mountains all the winter, except ewes; they are taken in a short time before the season for lambs. Sheep do better out than in, as far as they have been tried, in small flocks—say not over one hundred in number—in winter. They can find food sufficient to keep in good condition. Sheep are never diseased.”

Ohio.—Reports from most of the counties are favorable. In Vinton, where it is said there was not a period of thirty-two hours without a change of weather in the early part of winter, cattle are thin; in Champaign, wet weather and poor feed were unfavorable; in Fayette and Ross similar complaints are made.

Indiana.—The condition of farm stock may be placed at a full average. A few counties, as Elkhart, Noble, Steuben, and Kosciusko, report cattle thin and poor; in the latter it is mentioned that wheat has been fed to stock considerably, but that it is not equal to corn for that purpose.

Illinois.—A similar statement may be made of this State. Cows appear to be in better order than usual in localities where cheese factory enterprises are flourishing, where they receive better care. In Rock Island a lack of nutriment in hay is given as a cause of poor condition; in Warren, cattle have wintered badly; and in Cook, Fayette, and Galatin, reports are unfavorable; while Marshall, among other counties, never wintered stock in better order. The correspondent from Williamson says: “Cattle are coming out of their winter quarters in rather poor condition, thinner in flesh, upon an average, than they were a year ago.

Owing to the prolonged drought of last summer, and to the very early frosts which damaged almost all our corn, farmers generally have been very short of feed; and where feed is scarce cattle and sheep are usually put upon short rations; very few deaths have occurred, and as spring is at hand, and cattle will live on the range in two or three weeks, we are expecting to have a surplus during the summer and fall. Cattle are quite numerous in this county, and rapidly on the increase."

Michigan has wintered her stock well. Condition, as elsewhere, appears to be measured by quantity and quality of feed, as in Montcalm, "cattle were never in better order—there has been plenty of clover and hay;" and in Leelenaw, "poor—early winter prevented the gathering of turnips."

Returns from *Wisconsin*, *Minnesota*, and *Iowa* are extremely favorable, almost without exception. The Humboldt (Iowa) correspondent says: "Feed being plenty and cheap, they have been well cared for, which seems to be all that is required to make the business a success."

Missouri.—The temperature of winter was very equable, with little snow or rain, and farm stock are generally looking extremely well. In Cooper County it is said that "cattle are thin, caused by excessive wheat-raising, and the neglect of corn, hay, and oats."

Kansas.—Cattle are in fine condition in this State. It has been discovered that "good keeping is a cure for almost any ill that cattle flesh is heir to." "Farmers are beginning to see," says one of our correspondents, "that it does not pay to allow a steer to lose two hundred pounds in winter by want of food and shelter." The following exception is noted in Butler: "Almost all the cattle in the county are quite thin. In this, more than in any other county in the State, we depend upon our stock wintering 'on the range.' Last summer we had so much rain that the grass grew very large and coarse, and has not been worth much for winter pasture, and in consequence of the long drought we have no grass yet, which keeps our cattle in winter quarters at least one month longer than usual. This applies to stock in the northern portion of our county."

In *Nebraska*, farm animals have generally wintered well. In Douglas County an exception is mentioned: "In regard to the condition of cattle, I must say that the two great snow-storms of the past season have done much injury. One man in this county tried safely to winter two hundred head of cattle brought from Texas last fall. He lost *one-fourth* of the entire number, and fears that others may die before grass comes. It appears Texas cattle cannot be introduced here in safety. Nearly all poorly-fed and weak cattle have either perished in the two great storms, or are in a fair way to die soon."

California.—In the southern part of the State a severe drought parched the pasturage, and starved the cattle, causing the death of multitudes. One man in San Luis Obispo sent off nine thousand to the foot-hills of the Sierra Nevadas to preserve them from starvation. No rain fell in San Joaquin until the last of February. The northern part of the State had a sufficiency of rain to make the pasturage good, and the stock of the northern counties is therefore in good condition.

The correspondent for Stanislaus County says: "Neither cattle nor sheep require any extra care during the winter months. Part of the dry season, from August to the middle of November, is the most trying on stock, horses, cattle and sheep. After rain has fallen and destroyed the nutritiveness of the dry grass, is the worst time; then stock sometimes suffer; or when rain holds off till very late, as was the case during the latter part of last year and the early part of this. No loss was suffered in this county, but in the counties from one hundred to two hundred

miles south, considerable, say one-tenth, of both cattle and sheep died from want of water and feed. Cattle, in some instances, were sold for five dollars per head, and sheep for fifty cents."

The few returns received from *Oregon* represent farm stock there in an average condition. The correspondent for Linn County says: "Three months of February and March, and the present month, have been unusually wet—so much so, that no plowing worth naming has been done. For the last twenty hours it has rained more than usually hard, and the ground is fully saturated with water. The spring sowing must, of necessity, be late and probably limited. However, the grass for grazing is excellent."

The correspondent of Seattle, Washington Territory, says: "The winter has been mild and open; no snow or cold weather with the exception of about ten days in January, tolerably cold, and a snow storm about the first of March. As a general rule, cattle were not fed at all. None of my own stock, except cows and work-oxen, have had any hay or other feed, and they are in as good condition as those that have been housed and fed on good timothy hay."

The correspondent writing from Kane County, *Utah*, says: "Cattle have come out poorer than for many years before. Cause: last fall (1869) the Navajo Indians made several raids, stealing a large percentage of our horse stock, and killing many cattle for beef. For our own protection, we have been compelled to keep our cattle very close and guard them, and owing to the ravages of the grasshoppers last season, hay was very scarce. These two causes, combined with the fact that this has been our coldest winter, have served to bring our cattle into the spring range very poor."

LOSSES.

Losses from debility, starvation, or neglect have been less than usual during the past year. A smaller loss of lambs occurred last year than is sometimes recorded. A few exceptions are given. The correspondent of Des Moines County, Iowa, says: "In sheep, the loss has been much larger than common. A neighbor told me the other day that he had lost all his last year's lambs, and out of twenty-four dropped this spring he had saved but four, and out of my own flock of thirteen lambs dropped we have saved but three. I estimate the loss at ten per cent."

In Monterey County, *California*, the loss has been twenty times as great as in the preceding year; and in Mendocino it is said, "if any one lost, it is the result of negligence on the part of the herder, or by mere accident."

DISEASES OF FARM STOCK.

DISEASES OF CATTLE.

No prevalent disease has swept away the cattle of any portion of the country during the past year. Isolated cases of mortality occur from a multitude of causes, many of them arising from palpable neglect.

Abortion.—A few cases of abortion are reported in Hillsborough County, New Hampshire; in Essex and Berkshire, Massachusetts; in Otsego, Herkimer, and Ontario, New York; in Westchester, New York, more than usual; in Tompkins, less than usual—the correspond-

ent deprecating the theories assigned as its cause, designed, as he believes, "for the express purpose of concealing the truth," while the real causes ought to be known—but he fails to enlighten the public as to the nature of those causes. The only cases reported in the West are in Warren County, Illinois.

Pleuro-Pneumonia has been the cause of much loss and anxiety in Chester County, Pennsylvania, near Chadd's Ford, on the Octoraro; in Beaver County, Pennsylvania; and in Baltimore, Maryland. Some disease, assumed to be pleuro-pneumonia, exists in Larimer, Colorado. In Washington County, Iowa, a large number of milch cows have been diseased, and ten deaths are reported from "a fever resembling pneumonia."

The correspondent in Bremer County, Iowa, says: "Occasionally there is a case of what is called *blackleg* among young cattle, mostly yearlings, usually in the spring. Pretty thorough bleeding in the neck, on the opposite side to that affected, if not too long delayed, generally effects a cure."

Blackleg is one of the most general of the diseases affecting our cattle. A few cases occur in many localities where its existence is not indicated by our returns. It attacks calves and young cattle mainly, after leaving winter feed for pasturage. Reports of its ravages come from Riley County, Kansas; from Jackson and Pochahontas, Iowa; Meeker and Mille Lac, Minnesota; Larimer, Colorado; and from Perry, Pennsylvania.

Charbon, so severe for several years past in the South, has abated; isolated cases are reported in Tangapaho, Louisiana.

Milk fever has caused some loss in Livingston, Michigan, and in Lorain, Ohio.

Diseases known locally as "murrain," "dry murrain," "bloody murrain," and "staggers," have prevailed to some extent in different parts of the South; but the symptoms are not given with sufficient clearness to enable one to tell the proper name of the disease.

Starvation is the most common as well as most serious malady. Throughout the West and South much fatality should be attributed to exposure and lack of nutrition. In Iroquois, Illinois, one-third of a lot of Texas cattle died.

In Amite County, Mississippi, a disease among cattle has been fatal, commencing with a swelling of the throat.

The correspondent of Greene, New York, says: "There has, to a limited extent, been a few cases, in the northern towns of this county, of what some call 'cow pox;' it consists in the swelling of the limbs, terminates in sores, and often extends to the udder and body. Yielding readily to a few doses of sulphur, with the application of dilute carbolic acid, but cases fatal. Some attribute the cause to the wet season and flies."

SPLENIC (OR SPANISH) FEVER.

The passage of laws to prevent the summer driving of southern cattle, and their strict enforcement, have limited the losses from this disease in a marked degree. A few cases are reported. One in Chester County, Pennsylvania, furnishes another illustration of the invariable and peculiar features of this disease. Last summer a lot of cattle from North Carolina stopped at Avondale. Soon after they left, other cattle turned into the meadow they had occupied became sick. Some twenty were attacked, and about three-fourths of them died. No other cattle were turned into the same inclosure, and the disease did not spread fur-

ther. Many believed the ticks which infested the North Carolina cattle, and were communicated to the natives attacked, caused the disease. There is no evidence that these parasites have anything to do with its diffusion or virulence.

In Franklin County, Georgia, a disease believed to be Spanish fever is reported, but, from the statement given, some other malady is probably indicated: "There has been a disease among cattle that we are not acquainted with. They become stiff in their limbs, move like a horse badly foundered, have a high fever, with a very sore mouth. They nearly all got well, but were left in a poor condition to stand the winter; and we having an unusual hard winter, it has killed perhaps ten per cent. of the cattle in this county."

The correspondent for St. Louis County, Missouri, says: "We had no Spanish fever last year, Texas cattle being effectually excluded by the provisions of our law during the season they would be likely to spread contagion."

The Benton County correspondent says: "There has been no loss by Spanish fever. The vigilance of the people, and stringent legal enactments, have prevented the introduction of, or the transit of, Texas cattle through this county."

From Vernon: "Owing to the stringent laws of this State, but one small drove of cattle direct from Texas succeeded in entering and passing through this county last summer. This drove passed hastily along the east border of this county a short distance, through a district sparsely settled and containing but a few cows, oxen, &c., for home use. The Spanish fever broke out about six weeks after their passage, and continued until after two or three white frosts in October, when it ceased to spread, and those with fever at the time mostly recovered. About forty-four per cent. of the cattle which grazed on the grounds this drove passed over had the fever, two-thirds of which died, the remainder slowly recovering. No other drove is reported as having entered the county till after frost had killed the vegetation. Many thousand then passed through, without a known case of fever."

The Bates County correspondent says: "There has been no Spanish fever. The inhabitants of the county are organized and will not allow cattle to be driven through, although the laws of the State allow them to come in from December to April. I have known of two herds being driven over in the winter—one in 1867, the other in 1869—and in both instances many of the native cattle which came in contact with them died of the disease a short time after grass became a full bite." This instance appears to invalidate the certainty of exemption from infection received through stock introduced from the South in winter.

Last summer tens of thousands of Texas cattle were driven into the southwestern part of Butler County, Kansas. There were but few domestic cattle in that locality, but they all died.

There have been several herds of Texas cattle brought direct during the past winter from Texas and the Indian Territory, pastured and fed in Jefferson, Kansas, among some of which were occasional losses, but none could be clearly charged as Spanish fever. Our correspondent says: "I have wintered (1869) a herd in my pasture in which afterward my Durham cattle fed, and no harm has been witnessed."

The St. Francis correspondent (Arkansas) says: "There has been some Spanish fever in this county, caused by suffering native stock to be penned in lots used by Texas cattle passing through the county; loss very light."

A lot of Texas cattle, brought into Washington County, Virginia,

communicated disease to the native stock, resulting in one hundred and fifty deaths.

In Franklin, Kansas, the splenic fever appeared about the first of September. About one hundred head of native cattle died, mostly cows. The infection was taken from a drove of Texas cattle passing through the county.

It is reported from Shawnee, in the same State, that the disease has not prevailed since the shipment exclusively of Texas cattle by rail from Abilene.

The law preventing the herding of Texas cattle in summer has been generally enforced, so that few points have been infected.

A few cases are reported in Washington County, Nebraska.

The Missouri law has been well enforced; but a few droves went through Greene and Cedar, communicating the disease, which resulted fatally.

While it is admitted that southern cattle, particularly cattle in Texas, are apparently healthy, it is undeniable that when driven north, without external evidences of disease, the cattle communicating with them are almost invariably attacked upon reaching a certain climatic belt, and during a certain period of time thereafter, with a very fatal fever. At the same time it may be true, that this fever gets credit for more than its share of loss. The correspondent in Cherokee, Kansas, speaks warmly on this subject, as follows:

Everything of which an animal dies is here called Texas fever. Texas cattle are able to run all over the country, with no salt, care or attention, and drink stagnant and stoung water heated red-hot in the boiling summer sun; water that is full of leeches and living trash, and without shade on the treeless prairies. People turn out good stock and expect them to thrive like "Texas" cattle, and when they die they call it Texas fever. There have been cases of Texas fever, but it has killed only a small part of the stock that have died. I deem the principal cause of cattle disease the prevalent neglect of cattle in summer, and failure to furnish hay or shelter in winter, though there is a large area belonging to non-residents from which two tons per acre might be cut.

DISEASES OF HORSES.

It is gratifying to note less of prevalent or contagious disease among horses than has been reported in previous years.

More or less fatality from lung fever has existed in the following counties: Oxford, Maine; Penobscot, Maine; Orleans, Vermont; Hunterdon, New Jersey; Adams, Pennsylvania; Kent, Maryland; Huron, Ohio; Story and Hancock, Iowa.

Glanders is reported in the following localities: Beaver, Pennsylvania; Patrick, Virginia; Perry, Alabama; East Feliciana, Louisiana; Plaquemines, Louisiana; Newton, Arkansas; Matagorda, Texas; Sumner, Tennessee; Hall, Nebraska. Some disease, resembling glanders, is noted in Monroe County, West Virginia; Ingham, Michigan; and Merrick, Nebraska. The following extract refers to a similar disease in Atchison, Kansas:

Several horses and mules have been afflicted with a disease seemingly incurable, so far as the treatment followed or attempted here. The symptoms are a running from the nostrils of a white matter, with some cough, which at times is worse than others: debility without much fever; is contagious, and defies all remedies known by veterinary practitioners. It seems to be akin to the glanders, but still not that disease. Killing the animal has been recommended by good judges.

Diphtheria has prevailed in Chester, Pennsylvania, and Fayette, Kentucky.

Colic is more or less common, but is not so extensively fatal as to require special report. Many losses have occurred in Luzerne, Penn-

sylvania, from colic and ill-treatment; and in the same county, twenty horses died in a mine from some unknown cause. Colic, with ill-usage and starvation, has been fatal in Wilkinson, Mississippi. In Burt, Nebraska, some deaths have occurred from colic, caused by eating green corn and new oats.

In Washington, New York, swelling and stiffness of the joints, sometimes attended with partial blindness, has been a common complaint.

An affection of the kidneys, in Tompkins, New York, has occasioned some loss.

In Clarke, Alabama, horses have been attacked with a swelling under the throat and jaws, extending down the legs, and causing death.

The buffalo fly has caused the death of horses and mules in Lauderdale, Tennessee.

Charbon, so fatal in the South a few years ago, has nearly disappeared; it is less fatal than formerly, in places mentioned, as Yazoo and Holmes, Mississippi, and Desha, Arkansas.

Lac County, Iowa, a disease assumed to be chronic inflammation of the liver has been fatal.

"Blind staggers" is reported in many localities throughout the South.

In Alameda, California, influenza and milk fever are reported as prevalent.

In Pulaski, Illinois, horses brought from Kansas communicated a disease to those with which they came in contact, which proved fatal in two or three weeks, while the Kansas horses remain in about the same condition as when introduced.

A large number of horses has been lost by a catarrhal fever at Cleveland, Ohio; and a disease affecting the coffin joint, resulting fatally in ten days, has occasioned some loss. Diagnosis show a separation of the ligaments of the joint and foot, which turns up, causing the animal to step upon the ankle. The flexor tendons are literally severed from the lamina, and the foot will drop off by simply cutting through the skin with a knife. None have ever been cured, and no one appears to know the cause of the difficulty. Animals, apparently healthy, drop in the harness or at pasture, get up only a few times, and unable to walk a step.

The following extracts refer to other diseases:

Kalamazoo County, Michigan.—A strange disease has prevailed to some extent in this county during the last three months. Nearly all horses die that are attacked. It does not seem to yield to any remedies, so far as I can learn. It is attended with chills, fever, congestion of the lungs, and great prostration or weakness. It is thought to be contagious, one farmer having lost four within a short time.

Vernon County, Mo.—Horses have died in large excess of former years. The reports show three diseases: blind staggers, yellow water, and sore tongue. They are all described as living about a month before dying; eat hearty, get hide-bound, the hair deadens, they matter at the eyes and nose, and die of weakness. Some farmers have lost nearly all their horses in this way. From the information received, I have reduced the three diseases to one, and that one caused by feeding the worm-eaten corn, (carelessly,) which was so common last year, owing to the continued rains.

A fatal disease affecting horses is reported from Douglass County, Nevada:

Post-mortem examination determines the cause to be a small wire worm, from one-half an inch to two inches in length, pointed at either end, white, and about the diameter of a cambric needle. They penetrate the body of the animal in all directions, and have been found in some instances between the flesh and the skin. They are hard, wiry, and very tenacious of life. When placed in a decoction of tobacco juice they swim around quite playfully, eventually, however, giving it up. The symptoms manifested by the animal are weakness of the loin and general debility, gradually growing worse, lingering from five to ten days thereafter. The disease is not confined to any locality; makes its appearance in spots, but generally when it appears several of the band die. One farmer lost eight, his neighbor nine, another lost twenty-six, among which was a valuable stallion, that was kept up in the stable; the balance were

running out. Mr. Boles informed me that he saved his last five attacked by administering three ounces spirits of turpentine and two ounces sweet oil in one dose and obliging the animal to eat warm bran mixed with flax-seed. He informs me that one colt passed over two quarts of worms.

George W. Mumford, of Gloucester County, Virginia, writes as follows: "A friend having placed in my hands the volume containing your report as Commissioner of Agriculture for the year 1868, I have read it with attention and pleasure; and though quite a novice in farming, with only the experience of a few years, yet having suffered heavily by the loss of horses and mules, I thought it might be beneficial to others to communicate to you the nature and cause of the disease which produced their death, the symptoms attending it, and the appearance of the bodies as exhibited by post mortem examination. I lost four mules and two horses in a short time, all, as I believe, from the same cause.

"I will preface my statement with the remark that these animals were regularly and plentifully fed with good corn and fodder, but while cutting my oats, and for some time afterward, we had a succession of very heavy rains, which caused some of the shocks to heat and mould, and, in a greater or less degree, to rot before they could be housed or stacked, and consequently I did not deem them of sufficient value to haul them from the field. Subsequently, when not working my teams, they were turned into the oat field to graze. I perceived at intervals that they were eating the oats, and supposing they would only pick out such portions as were sound, they were not interfered with, and the shocks thus left in the field were either eaten or trampled under foot. In a short time these animals began to fall off in flesh, and evidently were unable to perform work requiring much strength. I became doubly attentive to their food, regularly saw them fed and watered, salted, properly curried, and rubbed, and furnished with good bedding; still they gradually declined in flesh. This progressed for about a month, then when I entered the stable early in the morning I found one mule down in his stall, and unable to rise. By running rails under the body both before and behind, with the assistance of my laborers, I raised the animal bodily and placed him upon his legs, when he seemed to regain his power of motion, and could walk and trot apparently as well as ever. After a few days he was found down in the stall again; he could raise himself on his fore-legs and sit up like a dog, but had no power over the hinder parts, from the loins down. The same assistance would have to be afforded, when again he would seem to recover from the paralysis of his posterior extremities. He did not lose his appetite, but indicated, occasionally, uneasiness in the loins, and the quantity of urine passed was small, and somewhat discolored. I applied many remedies that were suggested by friends, by my own mind, and sometimes by the advice of my family physician, but nothing seemed to afford relief.

"There was no veterinary practitioner in the neighborhood. Finding it impossible to continue to lift the animal almost daily in the stable, I turned him into a lot, where he was regularly fed and watered, and continued to graze for a week or so, but when down he could not rise without assistance. In this way he lingered until he died. No post mortem examination was made. In a short time one of my best horses was taken with the same symptoms, weakness in the loins and paralysis of the hinder extremities, requiring the same assistance, but when placed upon his legs having the ability to trot, and even to gallop as usual, but finally he died in the same manner. Then, in quick succession, another mule and another horse, and so on, until I lost the number stated above. I drenched them with whisky, and spirits of turpentine, with

laudanum, wild carrot tea, and with a combination of these, besides various other remedies, which did neither harm nor good, so far as I could judge. After I had lost three, with the aid of one of my field hands, I made a post mortem examination of one of the mules, cutting open the body from the windpipe along the abdomen to its extremity; examined the lungs, stomach, heart, liver, and viscera, and finally the kidneys. Every part of the body seemed in a sound and healthy condition, except the kidneys. One of these had entirely sloughed from its position and fallen into the cavity of the body. It appeared to be a mass of coagulated blood, resembling the color of the liver. I should not have known it to be the kidney, had it not been that the other kidney was partly in the same condition, about one-half of it being sound, though swollen, while the other half, which had not yet sloughed, was hanging to it, as a coagulum, showing it to be the same substance with the one that had sloughed. How the animal could live so long under such circumstances seems wonderful. In making the examination we discovered that the blood, which was found in considerable quantity in the body, was very thin, and of the color of pokeberry juice, much diluted with water; and when the hand was dropped in it and held up, it scarcely exhibited discoloration. All the horses and mules I had, except three, died, and these three had not eaten the heated or rotten oats, and hence I conclude they were the cause of the disease. I have stated these facts under the hope that the proper remedy may be suggested and made public.

[The department has prepared a report upon "the ill effects of smutty corn on cattle," which is now before Congress, with other reports on diseases of stock, and will probably be ordered printed at an early day.]

DISEASES OF SHEEP.

For a few years past, scab and foot-rot have been very prevalent among large flocks in New York, Ohio, and several of the western States. During the past year, owing to the culling and killing of diseased sheep, and greater care and better treatment, these diseases appear to be less prevalent. There is still much foot-rot; in some counties twenty-five per centum of all flocks have it among them, and in a few instances a much larger proportion. These diseases have spread somewhat by the dispersion of flocks to the west and south. Liver-rot is reported in Cuyahoga, Ohio, and rot is mentioned repeatedly in returns, without indicating whether foot-rot or liver-rot is meant. Grub in the head appears to be less common than heretofore. A disease of the loins has been fatal in Utah. In Ohio, several reports of deaths from "pale disease" are received. A few cases of dropsy are mentioned. In Texas, losses of lambs have been very severe from worms, and some fatality has been caused by exposure during cold weather. It does not appear that a larger percentage than usual of mortality of young lambs has been suffered. The following extracts from correspondence are appended:

Tuscarawas County, Ohio.—Sheep diseases are various. The most serious is what is called the pale disease and foot-rot. As to the cause of the pale disease, men differ; one fact is observant, that it is mostly confined to lambs and yearlings, and the deaths occurring from time to time, after the first of January. Their skins will be found white and bloodless; reduced in flesh, but not to as great an extent as might be supposed; some have been examined and small worms found in their intestines. It is my impression, derived from observation and practice, that a great deal of the pale disease could be avoided by taking the sheep in to winter in good, strong condition, and the time to watch and observe the sheep the most carefully is soon after the first frosts of autumn appear, and then a little grain fed daily until winter begins will be money well expended.

Fulton County, Ohio.—A disease is reported in Fulton County which attacks many while in good condition. They eat sparingly, get weak, and after a week or two die. No remedy has been found. There is no running at the nose, or eyes, or other indications of a disease of the head.

Winnebago County, Ill.—Last year I made a statement of an unusual disease appearing among my lambs. A similar trouble appeared again this last fall, commencing later in the season and running nearly through the winter, not so fatal as in the fall of 1868; then I lost about one-half of my lambs; during last fall and winter, about one-fifth have died, and, with one exception, of the same cause, dysentery. I have examined quite a number of those that died, and have come to the conclusion that the worms are the primary cause of the disease. I find the small white worms by millions all through the intestines, the latter being completely full of knobs, which, if I mistake not, contain the eggs of the parasites. I would like to have the opinion of a good veterinarian upon the subject. Some of my sheep died early in the winter of the same cause. Several flocks of lambs were decimated by dysentery last fall in this county.

De Witt County, Ill.—Our sheep have been subject to most all diseases to which they are liable, the scab and foot-rot being the most prominent and fatal. I think that fully three-fourths of our entire sheep have been carried off by these diseases, or affected to such an extent as to cause the owner to kill them for the pelt, the carcass being fed to hogs.

Laurel County, Ky.—There has been a disease rather unusual among sheep. I don't know what name to give it. The animal stands in a very stupid manner, will not eat anything; if driven, will move forward without turning for any obstacle until he runs against it as if he was blind. The eyes are wide open. In this condition he will live eight or ten days, and dies.

Nebraska.—Great mortality from scab is reported from Merrick County. Seventy-five per centum of the sheep have died from scab. One man had three thousand head in the fall; to-day he has about three hundred. I am satisfied his sheep did not get the care they were entitled to—a course of practice, I am sorry to say, too common in this county.

Worth County, Mo.—One flock of about twenty-five, a year ago, had a disease new to me and to others in this vicinity. They would commence stepping forward with their fore feet until their bellies would almost touch the ground, and would stand in that position till they would fall over. These are the symptoms so far as I recollect. The remedy used was a piece of assafetida about as large as a small hickory-nut, boiled in sweet milk, which proved effectual in most cases, but in case of a second attack they were incurable; at least, all attacked the second time died.

Lewis County, Mo.—There is little disease among the native sheep, but of one flock of eight hundred and fifty, imported from Illinois, all died except about sixty.

Bexar County, Texas.—The scab was unknown until of late years, when it was introduced by sheep brought from other States. The original sheep of the county, the Mexican, were never affected by the scab. It has been found to yield readily to treatment with tobacco juice, with which the scab has to be washed after the wool has been taken off. One flock numbering eight thousand head in 1861 was reduced to one thousand four hundred by 1868, when they were moved to a fresh range two hundred miles off. They are now recovering.

Williamson County, Texas.—We have no diseases among sheep excepting scab, and that prevails to a greater or less extent in all considerable flocks, the loss ranging from a small per centum to one more than equal to the increase.

DISEASES OF SWINE.

There is something radically wrong in the management of swine, resulting yearly in the loss of millions of young pigs and hogs, or else the genus *Sus* is an unhealthy and unwholesome animal, and therefore unfit for human food. One or the other of these conclusions seems to be forced upon the common sense and sound judgment of the observer. The mortality among young pigs, for which the butcher has no responsibility, is nearly if not quite proportionate to that of infants of the human species, and aggregates millions of individuals yearly. What is the cause? It is greatest in the West, notwithstanding the healthfulness of a free range, while eastern pigs are generally shut up in close pens. In all accounts of "hog cholera," which popularly means any disease which sweeps off the species as an epizootic, while remedies are unavailing, prevention is found to be practicable, at least in a partial degree, and coal ashes, salt, sulphur, soap, saltpeter, gas-lime, coal-oil,

tar, charcoal, sulphate of iron, smartweed tea, soap-suds, poke-root, tobacco, assafetida, garget-root, mandrake, and all the poisons of the apothecary shop are administered. There appears to be an irrepressible craving for something besides the inevitable corn, which is too concentrated for the exclusive and continuous diet of any animal; hence, those who feed sloppy mashs of potatoes, beets, or other roots, as well as corn, giving wholesome variety and sufficient bulk, and have exercised ordinary care and discretion in other respects, have ordinarily escaped the dreaded "hog cholera." Occasional feeds of bituminous coal, charcoal, sulphur, and similar substances of antiseptic or corrective tendency, have become quite common, and testimony to their efficacy is very abundant. Spirits of turpentine, copperas, and arsenic, are often given in the way of preventive medication, as well as in attempted cure. A judicious variety in feed, and care and treatment dictated by reason and prudence, of which an interest involving so much money is certainly worthy, would doubtless prevent much the greater portion of the losses which are so disastrous as to prevent farmers from enlarging and even continuing a business which has become so precarious. Numerous reports are received showing the discouragement of pork producers in districts where diseases have been peculiarly fatal, and revealing a disposition to quit hog-raising altogether.

No prevailing disease is reported in the New England States.

New York.—A few cases of dysentery in Tompkins; many pigs die in Genesee; in Niagara, few sows raise more than three or four.

New Jersey.—Some cases of "hog cholera" among a lot fed upon the refuse of a cheese factory in Sussex; a few western hogs died in Mercer, loss two hundred dollars; some disease in Gloucester.

Pennsylvania.—In Lancaster, one distiller lost one hundred out of three hundred; a miller lost all (thirteen) western hogs, some worth \$30 to \$60 each; one-half of a lot of Ohio hogs died in York; loss five per cent. in Perry; twenty per cent. in Lehigh.

Maryland.—Losses in Washington, Baltimore, and Kent.

Virginia.—Measles prevalent in Princess Anne; loss thirty-three per cent. in Nelson; loss two thousand in Henrico, mainly at distilleries; some feeders in Montgomery lost thirty fat hogs each; loss thirty-three per cent. in Scott; in Surry, one man lost seventy—in all cases hogs kept up and fed on cooked food escaped.

North Carolina.—Loss in Duplin, fifty per cent.; Jackson, fifty per cent.; New Hanover, 30 per cent.; Macon, twenty-five per cent.; Caldwell, 20 per cent.; and smaller losses were incurred in Chowan, Beaufort, Surry, Granville, Alamance, and Moore; in Green, several thousand pounds of pork were lost.

The following quotations are made from South Carolina correspondents:

Union County.—A disease, commonly called hog cholera, has carried off many of our hogs. When first attacked the hog becomes stupid and dull, then stiff, loses appetite, vomits; and they generally die in one to five days after the attack. All ages, sizes and conditions are subject to the disease. The loss has been about twenty per cent. Various remedies have been used, but nothing has been found that will cure in all cases. In some cases strychnine has been given and the hogs recovered.

Georgetown County.—Since February the hog cholera showed itself in the northern section of the county. One farmer reports his entire stock dead (about forty head) and thinks that within his range of five miles as many more have perished. The disease has not yet subsided.

Georgia.—Loss twenty-five per cent. in Pike; twenty per cent. in Warren and Chattanooga; ten per cent. in Clayton and Gilmer; less in Butts, Stewart, Taylor, and Walton.

Alabama.—Loss fifty per cent. in Lawrence; twenty-five in St. Clair; ten in Jefferson; and slight loss in Etowah and Tallapoosa.

Mississippi.—Loss fifty per cent. in De Soto; twenty in Coahoma; and less in other counties.

Arkansas.—Great mortality from measles in Desha. The correspondent for Arkansas County says: "Loss from hog cholera, as near as I can judge, about twenty-five per cent. Since the winter fifty per cent. have died for the want of feed; the mast failed and the farmers had no corn to feed on, as most of their ground was planted with cotton; take all together, I think seventy-five to eighty per cent. have died, where the disease prevailed." Loss in Mississippi, forty per cent.; in Montgomery, thirty-three per cent.; in Independence and Madison, twenty per cent.; in Jackson, seventeen per cent.

Texas.—In Travis, Fayette, and other counties, great mortality of young pigs is attributed to their eating young cockle burrs. Large losses are reported from Anderson, Coryell, Rusk, and Kaufman.

Tennessee.—Loss fifty per cent. in Anderson; thirty in Dyer; twenty-five in Smith and Lauderdale; \$1,000 worth in Union; and considerable in Weakley, Sullivan, Obion, Hawkins, Coffee, Jefferson, Greene, Giles, and Campbell.

Ohio.—Loss less than usual—a little cholera in Butler, Fairfield, Greene, Montgomery, and Wayne.

Kentucky.—Heavy loss is noted in this State. In Shelby three thousand out of twelve thousand fattening; in Oldham, one thousand head; in Henry to an alarming extent; heavy loss in Rockcastle; fifty per cent. in Christian and Laurel; twenty-five per cent. in Nelson; considerable in Jefferson, Gallatin, Calloway, Clark, Warren, Lincoln, Kenton, Johnson, and others.

In Michigan, hog cholera is only reported in Ottawa; and in Wisconsin, only in Waushara.

Indiana.—Hog cholera has been far less prevalent than usual, but the losses range from twenty per cent. downwards in Warren, Martin, Dubois, Greene, Benton, Pike, Johnson, Carroll, Bartholomew, Scott, Jefferson, Harrison, Miami and Elkhart. In parts of Tippecanoe the loss is fifty per cent.; fifty per cent. is given in Posey; and in Fayette four-tenths of last year's pigs were lost. The correspondent in Bartholomew says: "Hog cholera has prevailed in some localities, while others have escaped entirely. It may be remarked that the disease known as hog cholera has somewhat spent its force, and is not as fatal as when it first made its appearance among us. Whether this abatement of its force and fatality will continue and lead to its gradual and final extinction by natural or unknown causes, I cannot say. It is a matter worthy of note, that hogs in large lots and of small range are much more liable to contract the disease than when differently situated."

Johnson County.—"The hog cholera prevails more or less every year. I suppose the loss will average at least one-tenth for each season. But the actual loss by deaths caused by the disease is not so much the cause of the decrease of the pork product as the prevalence of cholera among hogs. Farmers are too cautious of their money and labor to put them in animals liable to such a fatal disease. Pork cannot be plenty or cheap until the disappearance of the cholera from among hogs."

Illinois.—In De Kalb the loss of two thousand old hogs and one thousand pigs is reported; in Crawford it amounts to \$20,000; in

Bureau, three hundred hogs; in Edwards and Champaign more loss was noted in rolling districts and in "timber" than in prairie; and other counties, in which cholera or other diseases have prevailed, are as follows: Piat, (three hundred in one township,) Monroe, Menard, Rock Island, Macoupin, Logan, Jo Daviess, Fulton, De Witt, Stephenson, Marion, Mercer, Kendall, Jackson, Henderson, Boone, Gallatin, Morgan, Lee, Greene, Williamson, (twenty-five per cent.,) Fayette, Pike, Massac, Clinton, White, (fifty per cent.,) Stark, Scott, and Pulaski. The following extract illustrates one aspect of the preventive question:

So thoroughly am I convinced of the use of preventives, that for the last three or four years I have been in the habit of feeding my hogs daily with a mixture composed of various ingredients, the basis of which is kitchen slops, to which is added a plentiful supply of salt, bran, Irish potatoes, cabbage, turnips, and other vegetables, all of which I endeavor to raise for that purpose in sufficient quantities. The above are all boiled together and fed when cool, in large troughs, to which all the hogs have access. A few years since I lost some hogs with cholera; but, since I commenced the above practice, I have not lost a single hog with cholera, and but very few with any other disease; although I keep a number, varying from twenty to forty head. At the same time my neighbors are continually complaining to me of their losses, and although I explain to them my plan of treatment and that my hogs don't die of cholera, very few of them seem to profit by my experience. Well, they reply, we don't know how it is, we slop our hogs also *sometimes*, and still they die. Besides slop, I feed my hogs dry corn daily. Whether or not it is the slop which keeps off the cholera, I cannot positively say, but I certainly should be afraid to feed them entirely on corn or any other dry food.

Deaths of pigs are common in Minnesota.

Iowa.—In three townships in Mahaska the loss is \$5,000; one thousand head in Appanoose; losses also occurred in Louisa, (twenty per cent.,) Clarke, Pottawattomie, Jackson, Warren, Cedar, Page, Butler, and Mills.

Missouri.—The disease is reported in a few counties. The correspondent of Howard says: "Cholera among hogs has prevailed to some extent, but chiefly among the hogs of those who are careless in not crossing with pure animals of good breeds. Those who are particular in keeping up the stock by crossing Chester, Poland, and Berkshires, have lost very few. With old stock bred in and in, the loss has, in some instances, been very great."

Nebraska.—A few hogs fed upon slops of breweries and still-houses in Douglas have sickened and died. In one case a lot of corn that the government refused to accept was fed to hogs, and considerable mortality resulted.

No mention of the hog cholera is made in California, but the following from Stanislaus County indicates a decrease in pork:

The business of swine raising is in the hands of a few and is followed as a distinct one. Those in it keep from two hundred to fifteen hundred or more, herding them in the foot-hills during the rainy season, where roots and mast abound. After grain is cut and threshed in July and August on the plains, the owners of hogs buy the fields for the season and turn their hogs into them, where they feed until fall, when the fat ones are sold for pork in the best market, usually San Francisco. From the scarcity of mast and roots, the increase in herds was less the past year than formerly. The use of the header in harvesting, in place of the reaper, leaves less grain in the field than former years, consequently the hogs made less pork this fall than other years. The falling off in the increase of stock and in the weight of pork in this county may be placed at two-tenths.

RAVAGES OF DOGS.

A partial enumeration of the sheep killed the past year by dogs, as returned from four hundred and seventeen counties, aggregating 99,387,

points to a loss of half a million sheep killed and as many more wounded by dogs, involving an actual loss of two million dollars, and a constructive and none the less real loss to production of many millions more. Millions of dollars' worth of rich grasses and other vegetation annually go to waste in the open and grassy forests, and in the old fields and waste places of the South, because there are no sheep to feed upon them; and the reason why sheep are not thus utilizing this spontaneous production is, the presence of dogs.

The following notes are but samples of complaints coming up from every quarter of the land:

Essex County, New Jersey.—No sheep kept merely for fleeces, on account of dogs.

King George, Virginia.—More than half the flocks destroyed by dogs this winter.

Greenville, South Carolina.—Dogs increasing faster than sheep; wool-growers are slaves to dogs.

Sumter, South Carolina.—Thirty sheep killed by dogs in one night.

Yazoo, Mississippi.—Half the sheep have been killed by dogs.

Wilkinson, Mississippi.—At one time, twenty-three killed.

Lincoln, Kentucky.—Dogs are a serious drawback to wool-growing. Our legislators have been importuned, time and again, to give protection, but they have turned a deaf ear to our appeal.

Rush, Indiana.—The slaughter is severe in every township.

Ripley, Indiana.—Sheep do well when not molested by dogs.

Warren, Indiana.—Large numbers killed by dogs.

Parke, Indiana.—The loss has been ten per cent. by dogs last winter.

Fayette, Ohio.—No losses except from dogs.

Morgan, Illinois.—Selling off for mutton, on account of dogs.

Edwards, Illinois.—Our correspondent lost sixty fine grade South Downs killed by dogs, and many injured.

Scott, Illinois.—Dogs destroy more than all diseases.

Scott, Missouri.—Sheep could be profitably kept but for dogs. *Many persons think the United States government should levy a tax on dogs.*

Iowa County, Iowa.—There is no disease but the dog disease.

Rusk, Texas.—No disease among sheep, but great loss from dogs killing them at night; and, unless dogs are restrained from running at large, as they do here, sheep will become extinct in the county.

Similar notes could be multiplied indefinitely. While the reduction of taxation is the tendency of the times, a tax by the general government upon dogs, like that of British and European governments, would prove a hundred-fold more benefit than hardship, relieving the poor of the great burden of keeping them, and society of the intolerable nuisance of worthless dogs, at the same time improving the animals worth the value of a tax, and taking from the industry of wool-growing one of its greatest burdens of taxation. The following table of actual returns is appended:

| States. | Number of communities reporting losses by dogs. | Number of sheep killed. |
|---------------------|---|-------------------------|
| Maine..... | 5 | 1,400 |
| New Hampshire..... | 3 | 123 |
| Vermont..... | 3 | 165 |
| Massachusetts..... | 5 | 595 |
| Rhode Island..... | 2 | 270 |
| Connecticut..... | 6 | 544 |
| New York..... | 20 | 3,515 |
| New Jersey..... | 3 | 2,610 |
| Pennsylvania..... | 19 | 3,671 |
| Delaware..... | | |
| Maryland..... | 7 | 1,416 |
| Virginia..... | 14 | 1,826 |
| North Carolina..... | 24 | 5,905 |
| South Carolina..... | 5 | 685 |
| Georgia..... | 16 | 2,533 |
| Florida..... | 1 | 50 |
| Alabama..... | 5 | 725 |
| Mississippi..... | 8 | 2,335 |
| Louisiana..... | 3 | 612 |
| Texas..... | 10 | 2,870 |
| Arkansas..... | 5 | 405 |
| Tennessee..... | 16 | 8,027 |
| West Virginia..... | 21 | 4,360 |
| Kentucky..... | 19 | 3,336 |
| Missouri..... | 32 | 10,602 |
| Illinois..... | 35 | 10,194 |
| Indiana..... | 18 | 4,078 |
| Ohio..... | 27 | 9,526 |
| Michigan..... | 13 | 2,244 |
| Wisconsin..... | 16 | 2,164 |
| Minnesota..... | 8 | 417 |
| Iowa..... | 28 | 8,670 |
| Kansas..... | 10 | 924 |
| Nebraska..... | 2 | 75 |
| California..... | 5 | 1,265 |
| Oregon..... | 5 | 1,410 |
| Total..... | 417 | 99,547 |

The legislature of New Jersey at its last session enacted the following law defining the legal status of the canine species, and levying a State tax upon owners of the same:

1. *Be it enacted by the senate and general assembly of the State of New Jersey*, That a State tax of \$2 on the owner of every dog, and \$3 on the owner of every bitch, be levied and collected at the same time and manner that taxes are now collected.

2. *And be it enacted*, That it shall be the duty of all owners of dogs of either sex to provide the same with a collar, to be worn at all times, with the owner's name and address thereupon.

3. *And be it enacted*, That dogs of either sex, to be considered as property, shall be registered by numbers, free of charge, in the township or city clerk's office of each township or city where such owner resides.

4. *And be it enacted*, That no damages shall be collected by the owners of any dog killed in the act of destroying cattle, sheep, or poultry.

5. *And be it enacted*, That the taxes collected by each county in pursuance of this act be used by said county as a fund for the award and protection of owners of sheep destroyed or killed by dogs—any surplus over and above the settlement in full of all claims for killed sheep to be used annually for public school purposes under the direction of the county school superintendent.

6. *And be it enacted*, That all acts or parts of acts inconsistent with this act be, and the same are hereby repealed.

7. *And be it enacted*, That it shall be lawful for any person or persons to kill and bury any dog or bitch found running at large without a collar, or known to be unregistered, for which service he or they shall receive the sum of fifty cents per head, to be paid by the collector of the town, township, or ward where said dog or bitch was killed, upon presentation of a proper affidavit to that effect.

8. *And be it enacted*, That this act shall take effect immediately.

EXTRACTS FROM CORRESPONDENCE.

FRUITS AND THE CEREALS IN MINNESOTA.

New Ulm, Brown County, Minnesota.—In consequence of the high elevation of this part of the country above the level of the sea, we shall probably never cultivate here the more delicate kinds of fruit. Some trials, however, have been made, and they tend to show that, with a careful selection of the situation, we may succeed in raising fruit that had been pronounced a perfect failure in former years. Some very fine Concord, Delaware, and Isabella grapes have been raised in the gardens.

Experiments made by several farmers and by inhabitants of this town seem to show—

1. That it is useless to plant fruit trees on the high prairies, unless protected by timber.

2. That it is not so much the cold itself, but the wind, that will kill the trees.

3. That for this reason our ravines should be preferred, if orchards are to be planted.

4. That imported trees suffer in proportion to the distance southward of the nurseries from which they came.

5. That the safest method is to have nurseries here, to get the shoots from other regions and ingraft them as near the root as possible.

6. That from the presence of the wild plum and the wild cherry it is believed that stone fruit may be raised here with less difficulty than core fruit.

7. That our wild plums may, by the transplanting of wild trees, be cultivated, and that they will attain a size three or four times larger than in their wild state.

From the abundance of wild grapes it may be inferred that wine culture will yet become a branch of industry with us; and the strong wine made from our wild grapes indicates that, with proper attention, some new and valuable varieties for northern latitudes may be produced here.

For berries of all kinds this region seems to be admirably suited. Strawberries of excellent flavor, red raspberries far superior to the black variety, black currants and gooseberries grow wild here, and the cultivated varieties in the gardens yield handsomely.

The chief article of export with us is wheat, and this will probably always be the case. The last harvest was a bountiful one, about twenty-five bushels per acre, on an average; but the low price of fifty cents a bushel does not compensate the farmer for his labor, and many are talking of cultivating something that will pay better. If this should be the result of the present embarrassment of our farmers, it would in the end be a real blessing; for during the last two years the raising of wheat has been carried on to an extent almost excluding other articles.

The price of meat conclusively shows the truth of this statement.

For with wheat at fifty cents a bushel, beef at seven and one-half cents, and pork at ten cents per pound, there must be something wrong in the farmer's calculations.

The yield of cereals in this county for 1869 may be set down as follows: Wheat, 150,000 bushels; barley, 30,000 bushels; rye, 10,000 bushels; oats, 85,000 bushels; Indian corn, 50,000 bushels.

A serious drawback attending wheat culture is the lateness of our spring. The season may also be wet, and the farmer finds it impossible to do all his work in the time allotted him. The wheat must be put in, however, and as there is not time left, other things will be neglected. This trouble will last as long as our farmers continue to raise spring wheat. They say that winter wheat will not do on our prairies; it will be killed by the frost, especially if there be no snow on the ground. In this they are undoubtedly right, if we bring the winter wheat from the woody districts of the middle States and sow it here on the open prairie. Yet there may be some remedy for this, and my humble opinion is, that if we could introduce the white or red winter wheat grown in the northeastern part of Germany, and especially in Silesia or Poland, these difficulties might be overcome. The climate of that part of Germany conforms very closely to that of Minnesota; our "northwesters" are hardly worse than the "northeasters" there, after they have swept over the icy plains of Russia—and yet a most excellent kind of winter wheat is raised there; the grain large and yielding very good flour. I have no doubt that if that variety could be raised here our farmers could do their sowing in the fall, and the harvest would be two weeks earlier than now.

Potatoes are generally very good here. The "striped bug," which has played sad havoc with them for the past two years, last fall made its appearance in Wisconsin and Illinois, and we shall probably be free from its ravages during the present year. It has been observed, that potatoes in newly broken prairie ground were not attacked by the bug, while it was found in great numbers in places where potatoes had been raised the year previous. The crop was reduced a great deal by the wet fall season. "Pink-eyes" suffered more than others; red varieties less than white ones.

HOG CHOLERA.

James Harkness, of St. Louis, Missouri, writing to the department in reference to "hog cholera," so called, says: A few words about prevention and cure. The beautiful butterfly that is seen in every clover field, lays its eggs in the flower and they are eaten by the hogs, when they develop into worms, much as the nits of the bot fly is developed in the horse, but with this difference: the worms are very injurious to the hog, whereas the bot does the horse no harm.

Sulphate of iron (copperas) in the proportion of a tablespoonful for a hog of one hundred and fifty or two hundred pounds once a week in the slop barrel, will kill every worm it touches as sure as prussic acid will kill red-blooded animals. In case of costiveness from eating nuts, add about the same of sulphur. These safe and simple remedies are equally good for all domestic animals, as they are obnoxious to worms of different kinds.

Timothy, herd, orchard, and other grasses are much better for hogs than clover. Hogs will appreciate shelter from summer's sun or the northern blasts, as much as any domestic animal we possess.

There is no such disease as hog cholera, and if you will send an intelligent veterinary surgeon here, I will convince him.

[There are several butterflies, example *Colias*, &c., which deposit their eggs on clover, but these insects could not possibly do the hogs any injury if introduced into their stomach with the food; even if hatched into worms, and able to resist the gastric juices, they would immediately die in the close, damp confinement; they would also require green clover to feed upon for at least some weeks before changing into the pupa state.]

FARM STOCK IN ABBEVILLE COUNTY.

Abbeville County, South Carolina.—Ours is not a grazing country, and hence not a stock-growing country. In former years our people raised hogs enough for a half supply of meat; most of the farmers kept a small flock of sheep for the family supply of mutton; kept a herd of cattle for like supply of milk, butter, and beef; and also raised some horses and mules. More recently, however, the raising of horses, mules, sheep, and hogs has been generally given up, very much to the impediment of the prosperity of the country. More attention is paid to cattle than to the other animals. The cow yields a present and continuing supply of food, and is not so liable to the raids of the vicious as the hog and sheep. Fewer are, however, raised than in former years. Owing to the drought of last summer, very little forage or cow-feed was saved and put up; no pease (the most valuable food for cows) was saved; so that the cattle have been stinted all winter, and many of them have died. Beef is now worth from twelve and one-half to fifteen cents per pound; we could formerly get as good at from six to eight cents. The pork and bacon is now sent to us from the States north and west of us. Working animals are for the most part brought from Tennessee and Kentucky, and sold to our farmers and planters; and when here they are so illy treated and neglected, that a large number of them die every year. The result of this whole system (or want of prudent economy and system) is that a drain is annually made upon the soil with but little return, which does and will make us a poor people until a change is made.

STOCK-RAISING IN MONTANA.

Gallatin County, Montana Territory.—The fact that vast herds of cattle have wintered in this Territory, solely by plucking as they do in summer the rich bunch grass and are now supplying our market with beef as fat as could be desired, is hard to be credited by those who have been accustomed to see the eastern markets supplied at this season by stall-fed beef only. Yet the fact remains. Sheep seem to thrive equally well.

THE FREEDMEN IN LOUISIANA.

Ouachita County, Louisiana.—The freedmen are working "on shares;" they get on an average one-third of the crop, and are at no expense, (at least they are offered this.) At the end of the year, however, in too many cases, the planter brings in a bill for goods sold the laborer, which takes up all his cotton; the corn is generally sold to the planter or employer at a nominal price, and the poor negro commences a new year's work without a cent.

In the immediate neighborhood of Monroe (this place) many of the

freedmen are buying farms; but few will sell to them. Three of them who purchased five hundred and eighty acres of good alluvial land, paid one-third the price out of their year's earnings.

IMPROVED CULTURE IN ARKANSAS.

Independence County, Arkansas.—There have been but five secular days since the 1st of February which were too wet or cold for plowing, and the result is that all farming work is one month more forward in this county than in the spring of 1869. Three-fourths of the corn and cotton ground is broken up, laid off, and in readiness for planting; and it is due to our people to say that their grounds never were prepared so thoroughly and with so much skill as is everywhere apparent in this county, in the preparation for the crop of 1870.

IMPROVED CULTURE IN MISSISSIPPI.

Amite County, Mississippi.—As a general remark, I feel authorized to say, that there is quite a disposition among the people of this county to improve their stock of every kind, and the improvement in agricultural pursuits, the introduction of new and improved implements of husbandry, and the application of manures and fertilizers, the raising of grasses, and the improvement in various kinds of seeds for field crops, clearly indicate an advance in the various departments of agriculture.

COTTON AND CORN IN SUNFLOWER COUNTY, MISSISSIPPI.

Sunflower County, Mississippi.—This is a cotton country—cotton and corn. We grow from thirty to forty bushels an acre, on an average, of corn, and make the best of cotton in as great abundance as any part of the continent, or indeed of the world. For though the Brazos and Red River lands occasionally make a hit and raise more cotton, our crops are far more certain than theirs. Little more than half the open land is worked. Much of the finest alluvial land lies now uncultivated. This is the country for poor immigrants—men with nothing but their sinews. They are furnished here with everything to make crops, and then those crops are equally divided with them. Any good hand here can make a thousand dollars, worth of cotton and four hundred bushels of corn. I knew one who in 1866 cleared \$1,600 with a crop he made and cultivated. He had no rent to pay, however.

DIVERSITY OF CROPS.

Macon County, Georgia.—The Department is working in the right direction in endeavoring to impress upon our people (of the South) the necessity of a more varied agriculture. Nine-tenths of the flour eaten in this county is raised elsewhere; one-third of the corn and nearly all the hay also. There is hardly a land-owner in this county who raises sufficient meat to furnish his labor. We are making some little effort to induce the freedmen to raise their own meat. They are our largest meat consumers, and if they could be induced to raise their own provisions, it would, to a great degree, put a stop to the exit of the enormous amounts of money yearly sent out of our county for provisions.

DAMAGE TO CROPS FROM STOCK RUNNING AT LARGE.

Camden County, Georgia.—An estimate was made in the fall of the cost of three small pigs. They destroyed the planting of over two acres of

sweet potatoes, estimated, by the crop gathered from another acre, at five hundred bushels, worth then \$1. Several times a man was sent to drive them out and find the holes under the fences and repair them, requiring two hours work, valued at ten cents per hour, sixty cents.

| | |
|--|---------------|
| Whole cost of three small shoats | \$500 60 |
| Sold for \$1 50 each | 4 50 |
| Net loss..... | <u>496 10</u> |

NECESSITY FOR A MIXED HUSBANDRY.

The correspondent for Stewart County, Georgia, after suggesting further interrogatories tending to show the number of mules and horses, the quantity of bacon, corn, and flour introduced into each county, and the percentage on total consumption, says: "Under a system of mixed husbandry in this county, mules, horses, corn and wheat, can, without doubt, be profitably raised; and would not such an exhibition of facts as the above interrogatories would elicit tend to expose the errors of the present system of planting, and lend important aid in enlightening the southern mind, so as to hasten the inauguration of a wiser system of mixed husbandry? Nothing but a startling exhibition of the sternest facts and figures will perhaps ever avail to convince the planting mind of the business folly—the suicidal policy—of yielding to cotton an agricultural monopoly in the South. Cotton planting is a habit with our people. This, added to the large aggregate income which it yields, though fictitious in the main, binds the South to cotton production with fetters strong as steel. An imposing array of aggregated statistical facts may break them.

"Another fact fundamental to the agricultural interests of this section of the South is the increasing scarcity of labor. Ever since the date of manumission labor has been steadily diminishing. In consequence, thousands of acres of good arable land in this county have been yielded to sage and brush. As a further consequence the planter is exerting himself to the utmost, with his diminished facilities, to bring up his income to the standard of previous years, when labor was more abundant. This results in favor of cotton. The scarcity of labor also leads to unhealthy competition in the labor market, with its concomitant evils. One of the most obvious is, that unscrupulous men supplant the better class by offering terms to the laborer with which they are unable to comply, and perhaps never intend to; whereas, the honorable planters, incapable of practicing upon the credulity of the laborer, by making deceptive promises, compete in the market under serious disadvantages. The result is, that the best men fail to obtain labor, inferior men deceive the freedman, and he becomes suspicious of the employers as a class, is demoralized as a laborer, and often retires in disgust from regular field labor and seeks a livelihood in the execution of chance jobs. In all this there is much matter for grave reflection."

DEPARTMENT SEEDS.

Jackson County, North Carolina.—Mr. G. Edwards, living in a mountain section near the Blue Ridge, where wheat seldom succeeds, last year produced on a little square in his garden at the rate of sixty bushels per

acre of Arnautka spring wheat. N. Y. Alman, of Franklin, produced nine bushels from a half bushel of seed on poor red land without manure, of the same variety. We think the Arnautka will prove a great acquisition on our light lands, which are subject to winter-kill.

Laurence County, Pennsylvania.—From the half-peck of Swedish White oats sent me, I have about seven bushels, as heavy as the original. The peck of Tappahannock wheat produced well, but I find some smut in it; the yield was at the rate of twenty-nine bushels to the acre.

Defiance County, Ohio.—The Tappahannock wheat received from the department has proved a valuable acquisition to our crops; it is pretty extensively sown this year; has proved good for three successive years.

Onondaga County, New York.—In the fall of 1868, I received from your department eight pounds of Tappahannock wheat, which was sown on good ground, yielding three and one-half bushels of plump and beautiful wheat. Last fall this amount was sown on about two acres of land and is now appearing very fine, not having been winter-killed in the least. It bids fair to be a valuable variety for this section.

Clayton County, Iowa.—One quart of the White Schonen oats received from the department last year was sown at the same time, and on the same kind of land with my other oats, and the results were as follows: from each bushel sown of my oats, I harvested just ten bushels; or an average of thirty bushels to the acre. The one pound of Schonen oats produced thirty-two pounds. The quality is very good; the kernels are longer and larger than other oats.

New Hanover County, North Carolina.—From the ramie seed sent, I raised about forty plants. The plants grew luxuriantly, and this spring, in digging them up to move them to a place where they will not be in the way, I am surprised to find such a mass of succulent roots, tender, and appearing as if they would be excellent food for stock.

AGRICULTURAL IMPORTS OF GREAT BRITAIN.

The British imports of 1869 show that the wheat received amounted to 37,695,828 hundred-weight. In 1868 the receipts were 32,639,768 hundred-weight. The increase is about sixteen per cent. The proportion received from the United States was much larger than usual. In competition with Russia, Prussia, Denmark, France, Turkey, Egypt, Chili, British America, and other countries, this country sometimes contributes a very small portion of the quantity required to supplement the home production of wheat. In 1868 Russia furnished thirty per cent., and the United States eighteen; in 1869 this country sent thirty-five per cent., and Russia twenty-four. Our contribution was equal to 24,605,479 bushels of wheat, besides 1,711,000 barrels of flour, equivalent to 8,555,000 bushels more—about 33,000,000 bushels in all.

The amount of raw cotton imported was 10,903,813 hundred-weight; in 1868, 11,857,893 hundred-weight. The imports of China grass were only eight hundred-weight in 1868, and eleven hundred-weight in 1869; their value £32 and £25 in those years, respectively, or 8½d. per pound in 1868, and 4½d. in 1869.

The importation of fertilizers continues to increase. The receipts of bones were 75,851 tons in 1868, and 95,979 tons in 1869.

The following tables present the quantities and prices of certain imports of agricultural products:

Imports into Great Britain of live-stock and certain agricultural products for the years 1868 and 1869.

| | 1868. | 1869. |
|--|---------------------|---------------------|
| Animals: | | |
| Oxen, bulls, and cows.....number.. | 114, 869 | 190, 674 |
| Calves.....do..... | 21, 819 | 29, 516 |
| Sheep.....do..... | 323, 447 | 691, 472 |
| Lambs.....do..... | 17, 708 | 18, 371 |
| Swine and hogs.....do..... | 33, 721 | 69, 067 |
| Bones, (burnt or not, or as animal charred).....tons.. | 75, 851 | 95, 979 |
| Grain: | | |
| Wheat from Russia.....cwts.. | 10, 053, 617 | 9, 158, 331 |
| Denmark.....do..... | 654, 419 | 549, 811 |
| Prussia.....do..... | 4, 584, 742 | 4, 635, 111 |
| Schleswig Holstein and Lauenburg.....do..... | 45, 412 | 57, 454 |
| Mecklenburg.....do..... | 647, 205 | 690, 147 |
| Hanse Towns.....do..... | 756, 654 | 736, 134 |
| France.....do..... | 56, 414 | 468, 274 |
| Illyria, Croatia, and Dalmatia.....do..... | 1, 004, 701 | 1, 030, 563 |
| Turkey, Wallachia, and Moldavia.....do..... | 3, 049, 088 | 2, 361, 878 |
| Egypt.....do..... | 3, 219, 536 | 1, 004, 479 |
| United States.....do..... | 5, 908, 149 | 13, 181, 507 |
| Chili.....do..... | 1, 309, 575 | 567, 107 |
| British North America.....do..... | 557, 443 | 2, 723, 053 |
| Other countries.....do..... | 792, 813 | 531, 979 |
| Total of wheat..... | 32, 639, 768 | 37, 695, 828 |
| Barley.....do..... | 7, 476, 224 | 8, 053, 660 |
| Oats.....do..... | 8, 112, 563 | 7, 916, 870 |
| Peas.....do..... | 1, 116, 246 | 1, 054, 387 |
| Beans.....do..... | 2, 647, 390 | 1, 897, 220 |
| Indian corn, or maize.....do..... | 11, 472, 226 | 17, 664, 113 |
| Wheat-meal and flour from Hanse Towns.....do..... | 615, 756 | 647, 430 |
| France.....do..... | 632, 359 | 1, 348, 061 |
| United States.....do..... | 676, 192 | 1, 711, 000 |
| British North America.....do..... | 192, 850 | 538, 766 |
| Other countries.....do..... | 975, 865 | 1, 156, 298 |
| Total of flour..... | 2, 093, 022 | 5, 401, 555 |
| Indian corn-meal.....do..... | 7, 389 | 6, 039 |
| Cotton, raw.....do..... | 11, 857, 893 | 10, 903, 813 |
| Manufactured.....do..... | £1, 285, 767 | £1, 182, 408 |
| Dyes and dyeing stuffs: | | |
| Brazil wood.....tons.. | 2, 300 | 7, 357 |
| Cochineal.....cwts.. | 31, 138 | 32, 002 |
| Indigo.....do..... | 75, 874 | 83, 415 |
| Logwood.....tons.. | 35, 468 | 50, 458 |
| Madder and madder root.....cwts.. | 306, 723 | 143, 765 |
| Garancine.....do..... | 79, 612 | 30, 510 |
| Sumac.....tons.. | 13, 251 | 13, 234 |
| Gambier.....do..... | 20, 239 | 16, 267 |
| Cutch.....do..... | 3, 541 | 2, 573 |
| Valonia.....do..... | 29, 623 | 23, 494 |
| Flax and tow, or codilla of flax: | | |
| From Russia.....cwts.. | 1, 295, 100 | 1, 087, 845 |
| Holland.....do..... | 139, 224 | 117, 930 |
| Belgium.....do..... | 218, 658 | 163, 358 |
| Other countries.....do..... | 163, 687 | 166, 189 |
| Goats' hair or wool.....lbs.. | 7, 066, 773 | 4, 485, 566 |
| Manufacture of goats' hair or wool..... | £90, 647 | £64, 413 |

Imports into Great Britain of live-stock, &c.—Continued.

| | 1863. | 1869. |
|--|-------------|-------------|
| Guano: | | |
| From west coast of Africa.....tons.. | 1,859 | 3,220 |
| United States.....do..... | 1 | 403 |
| Peru.....do..... | 155,776 | 199,122 |
| Bolivia.....do..... | 4,025 | 1,612 |
| British West India Islands.....do..... | 185 | 2,292 |
| Other countries.....do..... | 20,507 | 3,361 |
| Hemp and tow, or codilla of hemp.....total cwts.. | 1,076,198 | 1,055,769 |
| Hops.....do..... | 231,720 | 322,485 |
| Jute, and substances of the nature of hemp.....do..... | 2,205,062 | 2,496,058 |
| China grass.....do..... | 8 | 11 |
| Oils: | | |
| Petroleum.....tuns.. | 17,160 | 21,315 |
| Train, blubber, and spermaceti.....do..... | 13,991 | 14,806 |
| Palm.....cwts.. | 960,059 | 814,520 |
| Cocoanut.....do..... | 194,752 | 264,365 |
| Olive.....tuns.. | 17,585 | 28,240 |
| Seed oil of all kinds.....do..... | 23,292 | 19,917 |
| Oil of turpentine.....cwts.. | 108,897 | 116,893 |
| Oil-seed cakes.....tons.. | 162,339 | 159,295 |
| Potatoes.....cwts.. | 2,041,474 | 1,660,189 |
| Provisions: | | |
| Butter.....do..... | 1,097,539 | 1,259,089 |
| Cheese.....do..... | 873,377 | 979,189 |
| Eggs.....number.. | 383,969,040 | 442,165,080 |
| Fish, cured or salted.....cwts.. | 297,903 | 481,732 |
| Lard.....do..... | 237,260 | 255,964 |
| Beef, fresh or slightly salted.....do..... | 4,543 | 14,268 |
| Pork.....do..... | 6,984 | 21,930 |
| Bacon and hams, salted.....do..... | 638,127 | 740,194 |
| Beef, salted.....do..... | 240,577 | 214,903 |
| Pork, salted.....do..... | 144,378 | 165,944 |
| Meat not otherwise described.....do..... | 58,461 | 81,943 |
| Seeds: | | |
| Cotton.....tons.. | 94,759 | 105,646 |
| Clover.....cwts.. | 264,878 | 231,433 |
| Flaxseed and linseed.....qrs.. | 1,635,528 | 1,387,573 |
| Rape.....qrs.. | 356,884 | 260,755 |
| Silk, raw.....lbs.. | 7,036,177 | 5,573,366 |
| Waste, knubs, and husks.....cwts.. | 30,550 | 29,198 |
| Thrown.....lbs.. | 326,574 | 259,509 |
| Tallow: | | |
| From Russia.....cwts.. | 414,998 | 319,801 |
| Australia.....do..... | 215,418 | 224,186 |
| South America.....do..... | 456,802 | 431,712 |
| Other countries.....do..... | 150,130 | 250,090 |
| Wool—sheep and lambs: | | |
| From Europe.....lbs.. | 22,267,637 | 25,199,401 |
| British possessions in South Africa.....do..... | 35,993,527 | 34,307,882 |
| British India.....do..... | 17,602,442 | 18,796,578 |
| Australia.....do..... | 155,745,199 | 158,477,960 |
| Other countries.....do..... | 19,320,004 | 18,379,522 |
| Alpaca and the llama tribe.....do..... | 1,815,301 | 3,300,345 |
| Woolen manufactures not made up.....value.. | £2,261,192 | £2,445,229 |
| Woolen rags torn up to be used as wool.....lbs.. | 21,349,104 | 24,193,008 |
| Shawls, scarfs, and handkerchiefs.....do..... | 34,087 | 37,271 |
| Woolen and worsted yarn.....do..... | 9,337,947 | 10,022,528 |

*Value of certain imports into Great Britain for the year ending December,
1869.*

| | 1868. | 1869. |
|--|------------|------------|
| Animals—living: | | |
| Oxen, bulls, and cows..... | £1,970,975 | £3,695,295 |
| Sheep..... | 506,109 | 1,194,982 |
| Lambs..... | 21,055 | 24,032 |
| Grain: | | |
| Wheat..... | 22,069,353 | 19,515,758 |
| Barley..... | 3,799,527 | 3,379,775 |
| Oats..... | 3,875,929 | 3,340,494 |
| Peas..... | 549,313 | 455,142 |
| Beans..... | 1,265,842 | 832,412 |
| Indian corn or maize..... | 4,838,012 | 5,935,665 |
| Wheat meal and flour..... | 2,832,077 | 3,792,939 |
| Cotton, raw..... | 55,184,680 | 56,851,645 |
| Cotton, manufactures not made up..... | 1,285,767 | 1,182,408 |
| Flax: | | |
| Dressed and undressed, and tow or codilla of flax..... | 5,098,387 | 4,179,502 |
| Guano..... | 2,039,478 | 2,640,983 |
| Hemp: | | |
| Dressed and undressed, and tow or codilla of hemp..... | 2,087,669 | 1,940,275 |
| China grass..... | 32 | 25 |
| Jute, and substances of the nature of hemp..... | 1,970,220 | 2,181,718 |
| Hides: | | |
| Untanned, dry..... | 1,205,002 | 1,364,570 |
| Wet..... | 1,684,105 | 1,253,944 |
| Tanned, tawed, curried, or dressed, except Russia..... | 735,217 | 60,248 |
| Hops..... | 689,383 | 1,098,317 |
| Indigo..... | 2,854,213 | 3,083,531 |
| Oil-seed cakes..... | 1,411,525 | 1,361,580 |
| Oil: | | |
| Petroleum..... | 298,856 | 441,122 |
| Train, blubber, and spermaceti..... | 658,238 | 821,661 |
| Palm..... | 1,891,573 | 1,583,945 |
| Olive..... | 1,186,828 | 1,493,285 |
| Provisions: | | |
| Butter..... | 6,340,718 | 6,923,210 |
| Cheese..... | 2,565,213 | 3,083,850 |
| Eggs..... | 1,009,285 | 1,126,823 |
| Lard..... | 763,554 | 930,516 |
| Fish, cured or salted..... | 303,740 | 477,182 |
| Meat: | | |
| Fresh or slightly salted—beef..... | 12,516 | 39,951 |
| Pork..... | 19,554 | 77,518 |
| Salted—bacon and hams..... | 1,780,076 | 2,432,260 |
| Beef..... | 538,147 | 380,291 |
| Pork..... | 362,667 | 498,307 |
| Meat not otherwise described..... | 165,991 | 233,480 |
| Rice: | | |
| Not in the husk..... | 2,894,916 | 2,837,157 |
| Seeds: | | |
| Flax and linseed..... | 4,378,254 | 3,646,669 |
| Silk: | | |
| Raw..... | 8,741,045 | 6,812,831 |
| Thrown..... | 881,522 | 614,603 |
| Sugar: | | |
| Total of sugar unrefined..... | 13,339,758 | 13,550,579 |
| Molasses..... | 519,968 | 602,610 |
| Tallow..... | 2,961,319 | 2,770,285 |
| Tea..... | 12,431,454 | 10,319,420 |
| Tobacco: | | |
| Stemmed..... | 460,304 | 909,908 |
| Unstemmed..... | 1,282,983 | 931,438 |
| Manufactured and cigars..... | 555,144 | 408,556 |

Value of certain imports into Great Britain, &c.—Continued.

| | 1868. | 1869. |
|--|---------------|---------------|
| Wool: | | |
| Sheep and lambs | £14, 873, 623 | £14, 299, 336 |
| Alpaca and the llama tribe | 246, 875 | 397, 509 |
| Woolen rags torn up to be used as wool | 226, 509 | 243, 010 |
| Woolen manufactures not made up | 2, 261, 192 | 2, 445, 229 |
| Woolen and worsted yarn | 1, 653, 504 | 1, 775, 689 |

WHERE OUR WHEAT EXPORTS GO.

A reference to official customs statistics will show that Great Britain and her colonies constitute our main reliance for a market of our surplus wheat. Few may be aware how small the quantity taken by other countries actually is. The amount of wheat exported in the fiscal year ending June 31, 1868, was 15,940,899 bushels; of this but three per cent. (461,198 bushels) failed to reach British or colonial territory. The paucity of these exportations illustrates the futility of attempting to grow grain to feed the millions of Europe and Asia, as follows: France, 260,763 bushels; Portugal, 83,190; Belgium, 34,726; China, 29,882; Venezuela, 23,364; Peru, 20,289; Holland, 7,000; Philippine Islands, 1,119; Cuba, 560; Dutch West Indies, 400; Mexico, 5 bushels—total, 461,198 bushels. The practical deduction from these figures is, that there is but one country in the world to which we can look for a market for wheat, and to that one only for a small portion of her supply, and that portion at prices competing with the markets of the entire globe.

The prices of 1869, as compared with those of 1868, represent a reduction in the aggregate sent to Great Britain of eight millions of dollars. If, as is asserted, the prices of exports control domestic prices, the reduction of the value of the home consumption is equivalent to far more than the amount received from the entire exports of 1869, and the farmers would have received more money if this surplus had been allowed to rot. While low prices are not regarded as an unmixed evil, the present depression of the wheat market is shown to be a natural result, in part at least, of over-production, for which farmers have only themselves to blame. It is better to have abundance than scarcity, for the present good of consumers and the ultimate advantage of producers themselves; but when all other farm industries are neglected for one favorite crop, the resultant depression and discontent should be attributed to its proper cause, and not to taxation or other political influences.

BEET ROOT SUGAR.

Dr. G. W. Hulse, of Denver, Colorado, in a communication reporting the dispatch of specimens of sugar beets, &c., to the department, writes as follows in reference to beet sugar manufacture:

To establish successfully the production of beet sugar in this country much will depend upon and much will be expected from the Department of Agriculture; the mere production of the raw material is a simple part of the business. Extracting or the making of the sugar is a different business, and one which has deeply engaged the highest scientific minds of other countries for the last half century. They have resolved the

matter into complete success and it would be worse than criminal for us to shut our eyes against the light they have thrown upon this subject, so important to the comfort and welfare of man.

France now sends raw sugar into the partially free market of Liverpool, thus competing successfully with tropical or cane sugar from the colonies, though only a few years ago she was dependant for her supplies upon tropical sugar. Her resources of territory and of soil suitable for the growth of the raw material, compared with those of this country, are insignificant. Colorado alone can equal her capabilities for production.

Think of a hundred millions of dollars being sent out of the country annually for raw sugar, while we have the capabilities of producing our own supply, and adding this sum, and even double and treble the amount, to our annual exports. I have observed whenever a poor article of sugar finds its way to the consumer here or elsewhere, the mercantile class cry out, "beet sugar." But whence this prompting? Beet sugar is identical with cane sugar. The poorest sugar in the market is that of our own country prepared by the fashionable process of bi-sulphite of lime. By the use of this unreliable chemical compound a mixed sugar is often obtained, inverted or interverted. Our importers often buy such sugar, and refiners realize their mistake only when they come to filter and crystalize it. This mode of making raw sugar with bi-sulphite of lime has been industriously spread throughout the West Indies, whence our refiners draw a large supply. So long as sugar refiners located in our large commercial cities can use their capital to great profit in this business, the refining of beet-root sugar may languish, whatever the capabilities of the country; so long as frontiersmen were confined to the forest region of the country, that useful and noble tree, the sugar-maple, made the hardy farmer independent of the sugar refiner, and even of the cane sugar; and I have often thought that from the maple tree scientific men might draw useful instruction. Some authorities contend that sugar exists in plants at the expense of starch; others contend that it is an alteration from cellulose. Were it an alteration from either of these substances we ought to find it in the descending juice or sap of the maple, and not in the ascending or unelaborated juice or sap. All experience shows, however, that sugar is obtained from the ascending juice, and that after its more perfect elaboration, and the tree, plant, or grass puts forth its efflorescent state, we can no longer draw sugar from its juices. I believe this law will hold good with all other trees or plants furnishing the elements of sugar ready formed in the plant. The cane, *Saccharum officinarum*, is a perennial plant, and being tropical, or a bark stove perennial, comes slowly to its efflorescent state, and on this account its ascending juices require and have long time for elaboration. Not so with Indian corn, sorghum, and wheat. They are annuals, and afford sugar only before their juices undergo that degree of elaboration necessary to the efflorescence of the plant. Beets, carrots, and parsnips, being biennials, their juices contain their maximum of sugar substance the first year, and long retain it, and that too before the more perfectly elaborated juices form the complete skeleton or cellulose of the plant.

These facts I mention as important to the agriculturist, and especially so to those engaged in extracting the sugar from the raw material. Fortunately the plants lifted from the ground when it is known they contain their maximum of sugar matter may with careful management long retain it for the convenience of the subsequent operation. Here let me remark that this region, exempt from late summer and early autumn rains, has great advantage over the eastern and interior western States, where rain-falls at those seasons are heavy and always injurious, changing suddenly the state of the juices in the plants, and often making those that were rich in sugar poor and unprofitable. In this particular matter I have had my experience with sugar-cane. Beets are quite as reliable for the yield of sugar in a favorable northern climate as sugar-cane is in the tropics, or in semi-tropical climates. My belief is that if proper machinery for extracting the juice of the beet, and suitable utensils for defecating, filtering, evaporating or reducing to sugar, could be obtained for this section of the country and properly located, a new era in sugar production would speedily follow.

The use of the rasp or mill for rasping or tearing the beets, preparing the roots for the press, is as easily managed as an old-fashioned apple or cider mill, and the hydraulic presses work with corresponding simplicity. The utensils for defecating, filtering, and evaporating, as well as the centrifugal for drying, have all long been in use in the first-class sugar-works of Louisiana, and skilled workmen or operators in this branch of the business are quite equal to all that is required in this particular. Could our scientific journals, and our agricultural papers especially, be induced to spread before the people cuts, drawings, and representations of machinery and utensils necessary for this particular industry, the reading community would soon come to appreciate its requirements or advantages.

PROFIT OF STEAM PLOUGHING.

The following extract of a letter from E. Lawrence, sugar planter in Plaquemines Parish, Louisiana, presents a very gratifying view of the results of plowing with the Fowler steam plows, of the importation of which an account has heretofore been given :

In the fall of 1867 I imported a complete set of fourteen-horse power double-engine steam-plowing tackle, from Messrs. John Fowler & Co., of Leeds, England. Owing to the very rainy and bad weather in the fall and winter of 1867, our plowing operations were very limited. Our work, however, proved very satisfactory, and the facility and ease with which my laborers were enabled to handle the tackle, and the anxiety to have more powerful engines for our heavy, stiff clay soils, determined me to order from Messrs. Fowler & Co. a set of their twenty-horse power steam-plowing tackle, which I have found to be all that was required for our heaviest work. Since then both sets have been in constant use, plowing the lands. When employed in breaking up, with the mold-board plow, they run to the depth of fifteen to twenty inches; and when cultivating or subsoiling between the planted and ratoon cane rows, to the depth of twenty to twenty-four inches.

The first forty acres of steam-plowed lands, which were broken up in the spring of 1868 and planted in corn and peas, and sugar cane in the fall of the same year, gave a yield of one hundred thousand pounds dry sugar, being over twenty-five hundred pounds, or two and one-half hogsheds, of sugar to the acre. On other steam-plowed lands, planted the following spring in cane, the result has been nearly as satisfactory, and this too during a season more unpropitious for the yield of sugar than any I have known for the last twenty-five years. Many of my fields where the stand of cane was equally as good, but cultivated only with horse or mule power, and receiving much more labor and attention than the steam-plowed lands, did not produce more than fifteen hundred pounds, or one and one-half hogsheds to the acre. Therefore, my experience, as you can readily perceive, fully justifies me in stating that the yield of cane upon the steam-plowed and steam-cultivated lands, and with *less than half the labor*, will be *fifty per cent.* greater than can possibly be obtained by any other system of cultivation. The advantages which will be derived from the application of steam to the cultivation of the soil, in our rich and inexhaustible lands in the valleys of the Mississippi, and the vast prairies of the West, so admirably adapted to steam cultivation, is not now within the reach of the human mind to calculate.

The prejudices against steam-cultivating machinery may yet for a time retard its general use on this continent; but the scarcity of, and rapidly increasing demand for labor, now so sensibly felt in every section of our country, can only be supplied by the introduction into general use of the steam plow. It will supersede the necessity of the introduction of Chinese labor. We will then be able to supply the world with *cotton, bread and meat*. There is no country so admirably adapted to steam cultivation as ours; and I believe the day is not far distant when the smoke of the steam plow will ever be in sight of the millions of freemen who will then cultivate and inhabit our vast agricultural continent.

FARMING IN AROOSTOOK COUNTY, MAINE.

The Presque Isle Sunrise supplies statistics of farm products in Aroostook County, Maine, for 1869. The seventy-six farms reported show the aggregate yield and value of the several products named, as follows :

| | |
|---|----------|
| 2,990 tons of hay, at \$10 per ton..... | \$29,900 |
| 2,790 bushels wheat, at \$2 per bushel..... | 5,580 |
| 693 bushels corn, at \$1 50 per bushel..... | 1,039 |
| 26,631 bushels oats, at 50 cents per bushel..... | 13,265 |
| 24,731 bushels buckwheat, at 50 cents per bushel..... | 12,365 |
| 573 bushels beans, at \$3 per bushel..... | 1,719 |
| 20,260 bushels potatoes, at 25 cents per bushel..... | 5,065 |
| 28,531 pounds butter, at 40 cents per pound..... | 11,412 |
| 7,190 pounds cheese, at 15 cents per pound..... | 1,078 |
| 13,500 pounds clover seed, at 25 cents per pound..... | 4,375 |
| 62,536 pounds pork, at 15 cents per pound..... | 9,379 |
| Total..... | 95,177 |
| Less paid out for labor..... | 7,759 |
| Leaving..... | 87,417 |

To be divided among seventy-six owners of the farms for their own time and labor, which is equal to \$1,150 each, on an average. When it is remembered that there are other products from these farms than those enumerated, such as roots of all kinds, minor articles of the garden, dairy, &c., we think that it will be admitted by all that farming pays well in Aroostook.

FAT STEERS.

George Ayrault, of Poughkeepsie, New York, reports to the department on four steers, seven-eighths shorthorn, raised by him, and sold near the close of 1869 to William Lalor, of Center Market, New York City, for \$3,200, the age of one of the animals being seven years, and of the others six years. The largest stood about six feet high, with a girth of ten feet; and the weight of the animals was 3,300 pounds, 3,320 pounds, 3,406 pounds, and 3,440 pounds, respectively; their proportions being good notwithstanding their enormous size. The aggregate gain in weight during the season of 1869 was 1,460 pounds. The net beef weight of the larger pair, after slaughter, was 4,537 pounds, exceeding, it is claimed, that of any other pair of beeves ever fattened.

Their average weight at the age of three years was 1,850 pounds. After attaining this age, each received daily a peck of corn meal and wheat shorts, or oatmeal, combined, divided into two feeds, and, as desert, a peck of sugar beets twice a day. In the summer, until lately, their only feed was grass supplemented with a little sweet hay. The second winter the daily feed of meal was increased to ten quarts each, given in two feeds. In the summer of 1869, each received one peck of meal per day, given at morning and at night; and in the winter following, twelve quarts of meal daily, in three feeds, besides roots. In their course of feeding they have had, in winter, the best of early cut hay from old meadows, and have usually had access to it in summer. They were not closely confined in winter, usually having the run of a small yard, with access to water, and with sheds under which they could lie protected from storms, and were tied at feeding time.

It is Mr. Ayrault's opinion that when cattle are fattening and it is desired to give them all the grain they will eat without being clogged, it is important to feed three times a day; and he considers beets, or their equivalent, essential in winter in promoting the growth of grain-fed cattle. He does not advise heavy feeding for beef until animals are well grown, his practice being to maintain his stock in merely thrifty condition until they reach the age of three years.

A committee of the Farmers' Club, American Institute, reporting on these cattle, state that they find that the only profit arising from the last year's growth of the animals lay in the increased or "fancy" rates obtained on account of magnitude, and that, in Mr. Ayrault's judgment, five years is the age at which fattened cattle will give the greatest profit to the feeder.

THE UPPER ARKANSAS VALLEY.

Lying concealed amid the loftiest peaks of the Rocky Mountains, in Southern Colorado, is a very remarkable and interesting little valley. As it is watered by the upper portion of the Arkansas River, it has received the name of the "Upper Arkansas Valley," yet in reality is a genuine park, being completely surrounded by a rim of lofty mountains, whose summits are partially covered by perennial snows. It is about forty miles in length and averages eight to ten miles in width, and

has an average elevation of about eight thousand feet above the level of the sea. It seems once to have been the bed of a large mountain lake, into which immense masses of boulders were precipitated from the western mountain rim; but the lake, bursting through the eastern rim, near Cañon City, gave vent to the accumulated watery mass, which, rushing down the main channel, has furrowed out these vast boulder deposits, leaving well-marked shore-lines, mounds, foot-hills, and beautiful little cross valleys. One of these little valleys, about eight or ten miles long and six or seven wide, is exceedingly beautiful and quite fertile. It has not escaped the keen eyes of the roving pioneers, for already it has a sufficient population to form a school district; and there, amid the dark gray basaltic peaks that shoot their sharp lines far above the mountain sylvia, the eye is cheered with the sight of rosy youthful faces as they enter the common-school room.

As rich milk and delicious butter can be produced here as at any point in the Union. A luxuriant growth of nutritious grasses covers the entire valley, in fact nearly the entire park. At one point the *Pinus edulis* or pinõn, grows in abundance, and around the entire border runs a broad fringe of pines interspersed here and there with an aspen grove.

Irish potatoes and turnips yield abundant crops, of large growth and most excellent flavor. Barley can be raised, and produces a moderate crop; while oats come up fully to the western average. Wheat can also be grown; but spring wheat, being sown rather late, is sometimes injured in the fall by the frost; the introduction of winter varieties is remedying this difficulty. Other vegetables, besides those named, as cabbages, onions, &c., can also be very easily raised.

Although occupying such an elevated position, yet shielded, as the park is, by the surrounding mountain ranges from the bleak winds, its winter is comparatively mild, cattle being able to graze most of the year.

This little mountain valley possesses peculiar interest from the fact that it is surrounded by rich mines, which are just beginning to attract attention; and which ere long will doubtless create a demand for all the productions that can be raised on the arable portions of it. A mill is already in operation on one of the streams which cross the park.

COMMERCIAL FERTILIZERS IN CONNECTICUT.

The legislature of Connecticut at its last session enacted the following law concerning the manufacture and sale of commercial fertilizers in that State:

SECTION 1. Commercial manures sold, or kept for sale in this State, shall have affixed to every bag, barrel, or parcel thereof, which may contain fifty pounds or upward, an especial name or trade-mark by which the same may be known or designated, with the name and place of business of the manufacturers or seller, together with a true analysis or specification of the chemical elements, and their several amounts contained therein, and also the quantity contained in the package.

SEC. 2. Any manufacturer or trader who shall sell or offer for sale any such package, and who shall neglect to affix such stamp, impress, or card, as is provided in section first of this act, or who shall affix a stamp, impress, or card, claiming five per cent. more of any fertilizing ingredient than is contained in the package, shall forfeit ten dollars for each and every one hundred pounds of the material so sold, or offered for sale, without the proper mark as directed in section first, to be recovered before any tribunal of competent jurisdiction, one-half to the State, and one-half to the prosecutor of the same.

SEC. 3. The provisions of this act shall not apply to fish pomace, nor to any manure prepared essentially from fish and sold as such, nor to any other commercial manure, which is sold at a price not exceeding one cent per pound.

SEC. 4. The secretary of the Connecticut Board of Agriculture is hereby authorized, at his discretion, to procure the analysis of any fertilizer offered for sale in this State, and to prosecute persons who violate the provisions of this act.

AGRICULTURAL IMPORTS.

Table showing the quantity and value of importations into the United States of the products named during the year ending December 31, 1869, compared with the corresponding imports of the year 1868, as reported by the Statistical Bureau.

| Products. | Quantities. | | Values. | |
|--|---------------|---------------|------------|------------|
| | 1869. | 1868. | 1869. | 1868. |
| Cotton, raw.....pounds.. | 1,348,331 | 297,168 | \$339,384 | \$44,898 |
| Guano, except from American islands.....tons.. | 14,914 | 14,065 | 295,721 | 284,865 |
| Gypsum, unground.....tons.. | 137,249 | 122,232 | 122,690 | 109,207 |
| Madder, ground.....pounds.. | 20,835,291 | 24,848,098 | 2,543,734 | 2,597,386 |
| root.....pounds.. | 355,345 | 303,025 | 46,237 | 34,707 |
| Animals, living, of all kinds..... | | | 4,124,360 | 3,066,117 |
| Breadstuffs: | | | | |
| Barley.....bushels.. | 6,589,676 | 4,303,951 | 5,325,285 | 4,848,937 |
| Bread and biscuit.....pounds.. | 707,373 | 119,294 | 49,043 | 9,921 |
| Indian corn.....bushels.. | 78,792 | 66,432 | 73,059 | 51,121 |
| Indian meal.....barrels.. | 232 | 116 | 801 | 456 |
| Oats.....bushels.. | 544,807 | 437,546 | 205,365 | 200,103 |
| Rice.....pounds.. | 46,020,400 | 58,394,722 | 1,079,770 | 1,596,543 |
| Rye.....bushels.. | 268,970 | 143,962 | 175,781 | 143,444 |
| Rye flour.....barrels.. | 224 | | 773 | |
| Wheat.....bushels.. | 638,715 | 1,634,403 | 685,351 | 2,440,999 |
| Wheat flour.....barrels.. | 88,640 | 72,183 | 399,571 | 476,396 |
| Potatoes.....bushels.. | 105,753 | 199,705 | 64,113 | 122,741 |
| Macaroni, vermicelli, and all other preparations from breadstuffs..... | | | 448,883 | 312,254 |
| Cotton, manufactures of: | | | | |
| Bleached and unbleached.....square yards.. | 27,762,057 | 21,129,870 | 3,633,069 | 2,875,655 |
| Printed, painted, or colored.....square yards.. | 24,408,940 | 15,194,523 | 3,386,791 | 2,186,567 |
| Hosiery, shirts, and drawers..... | | | 4,451,848 | 1,515,548 |
| Jeans, denims, drillings, &c.....square yards.. | 6,786,143 | 4,930,506 | 1,024,581 | 668,954 |
| Manufactures not specified..... | | | 9,509,700 | 9,452,919 |
| Flax, and manufactures of: | | | | |
| Raw.....tons.. | 1,854 | 2,183 | 642,498 | 762,518 |
| By yard..... | | | 14,079,307 | 11,650,974 |
| Other manufactures..... | | | 2,976,768 | 2,444,464 |
| Fruit, of all kinds..... | | | 8,094,604 | 6,619,437 |
| Hemp, and manufactures of: | | | | |
| Raw.....tons.. | 18,757 | 22,104 | 3,103,008 | 3,461,213 |
| Manufactures of, by yards..... | 907,029 | 1,467,350 | 142,928 | 240,484 |
| Other manufactures..... | | | 226,711 | 238,927 |
| Hides and skins, other than furs..... | | | 14,204,761 | 9,961,999 |
| Jute and other grasses, and cocoa fiber and manufactures of: | | | | |
| Raw.....tons.. | 20,009 | 6,941 | 1,243,586 | 461,575 |
| Manufactures of, by yards..... | | 377,871 | 113,367 | 77,800 |
| Gunny cloth and gunny bags.....pounds.. | 10,146,678 | 17,256,372 | 300,058 | 498,216 |
| Other manufactures..... | | | 1,233,527 | 1,693,160 |
| Opium, and extract of.....pounds.. | 176,443 | 192,283 | 1,294,299 | 994,175 |
| Paper: | | | | |
| Printing.....pounds.. | | | 75,352 | 124,226 |
| Writing..... | | | 198,808 | 315,098 |
| Other paper..... | | | 234,600 | 201,112 |
| Papier maché, and all other manufactures of paper..... | | | 557,204 | 398,263 |
| Silk: | | | | |
| Dress and piece goods..... | | | 11,923,087 | 8,973,743 |
| Hosiery..... | | | 38,017 | 23,786 |
| Manufactures not specified..... | | | 11,271,718 | 10,471,308 |
| Sugar: | | | | |
| Brown.....pounds.. | 1,298,591,717 | 1,135,236,568 | 62,492,837 | 51,694,817 |
| Refined.....pounds.. | 1,028,971 | 426,554 | 70,045 | 40,050 |
| Molasses.....gallons.. | 53,946,621 | 60,854,256 | 12,351,401 | 13,056,465 |
| Melado and sirup.....pounds.. | 21,065,819 | 5,976,402 | 726,071 | 173,043 |
| Candy and confectionery.....pounds.. | 48,694 | 42,015 | 13,974 | 10,338 |
| Tobacco: | | | | |
| Leaf.....pounds.. | 5,904,547 | 5,844,051 | 2,295,969 | 1,811,639 |
| Cigars.....pounds.. | 474,548 | 354,784 | 1,471,819 | 1,029,958 |
| Snuff.....pounds.. | 18,666 | 18,130 | 6,251 | 6,256 |
| Other manufactures of..... | | | 14,247 | 37,933 |
| Wool, sheep's, goats' and camels' hair, and manufactures of: | | | | |
| Raw and fleece.....pounds.. | 49,812,392 | 26,449,321 | 7,171,075 | 4,031,370 |
| Cloths and cassimeres..... | | | 7,688,348 | 5,867,363 |
| Woolen rags, shoddy, &c.....pounds.. | 796,652 | 585,865 | 69,317 | 47,436 |
| Shawls..... | | | 1,942,795 | 1,419,293 |
| Blankets..... | | | 22,854 | 20,421 |
| Carpets.....yards.. | 3,881,830 | 3,731,497 | 4,261,258 | 3,616,716 |
| Dress goods.....yards.. | 63,274,338 | 59,310,851 | 15,663,362 | 14,890,667 |
| Hosiery, shirts, and drawers..... | | | 466,368 | 396,274 |
| Manufactures not specified..... | | | 4,940,105 | 4,833,855 |

EXPORTS FROM ODESSA.

A table of the exportation of grains, seeds, wools, and stuffs from the port of Odessa in 1869.

| Destination. | Wheat. | Rye. | Indian corn. | Barley. | Oats. | Peas. |
|---------------------------------|--------------|-------------|--------------|----------|-------------|----------|
| Turkey, Greece, and Egypt | 101, 185 | | | | | 8, 928 |
| Mediterranean | 1, 205, 290 | | 23, 808 | 139, 873 | 318, 435 | 44, 045 |
| The United Kingdom | 5, 083, 051 | 107, 137 | 860, 071 | 404, 739 | 279, 746 | 6, 547 |
| The Continent | 35, 712 | | | | | |
| Sweden and Norway | 23, 808 | 95, 233 | | | | |
| Total in bushels | 6, 449, 046 | 202, 370 | 883, 879 | 544, 602 | 598, 181 | 59, 520 |
| Exportation in 1868 | 7, 297, 213 | 523, 780 | 958, 280 | 660, 678 | 1, 684, 430 | 122, 017 |
| Exportation in 1867 | 16, 806, 208 | 2, 588, 546 | 476, 164 | 221, 416 | 86, 305 | 35, 117 |

| Destination. | Flour. | Flaxseed. | Cobza and rape. | Totals. | Wools. | Stuffs. |
|--------------------------------|----------|-------------|-----------------|--------------|----------------|----------------|
| | | | | | <i>Pounds.</i> | <i>Pounds.</i> |
| Turkey, Greece and Egypt | 479, 140 | | 1, 786 | 591, 039 | | |
| Mediterranean | 23, 808 | 238, 082 | 12, 499 | 2, 005, 840 | | |
| The United Kingdom | 77, 377 | 851, 143 | 204, 751 | 7, 874, 562 | | |
| The Continent | | 136, 897 | 19, 047 | 191, 656 | | |
| Sweden and Norway | | | | 119, 041 | | |
| Total in bushels | 580, 325 | 1, 226, 122 | 238, 083 | 10, 782, 138 | 11, 036, 698 | 8, 007, 015 |
| Exportation in 1868 | 482, 116 | 1, 970, 129 | 380, 931 | 14, 079, 574 | 10, 675, 921 | 7, 682, 407 |
| Exportation in 1867 | 517, 233 | 1, 315, 403 | 571, 397 | 22, 617, 789 | 8, 995, 269 | 7, 624, 699 |

Tchetverts — Tschetwerts = 5. 95205 bushels.

Poud — Pud = 36. 06764 pounds.

POMOLOGY IN WURTEMBERG.

C. Schickler, president of the Horticultural Society "Flora," sends to the department the following statement relative to pomology in Wurtemberg:

Wurtemberg may be called one of the largest fruit-growing countries in Europe. In very good and prosperous fruit years, as will happen once or oftener in every decennium, (1860, 1864, 1869,) the crop amounts to from three to four hundred weight of fruit for every head of our population. The very perceptible saving in cereals and other provisions during such years reduces their prices, increases the export, and has caused our farmer's adage: "*Cheap times come out of the wood.*"

Our fruit cultivation pervades every district. The orchards increase in number and size every year, not only in the river valleys but on the hill slopes and mountains, so that you may now see fine and remunerative orchards two thousand and two thousand four hundred feet above tide-water, where it was formerly thought that no fruit could prosper.

The most fruitful sections are found along the shores of the Neckar, north of the Alb, and generally on the northern and northeastern slopes of the hills, which prove most propitious for fruit.

According to official statistics, as far as obtainable, there were in Wurtemberg during the year 1852, of seed fruit, 5,000,000 trees, with a yearly crop of 8,000,000 hundred weight of fruit; and of stone fruit, 3,500,000 trees, with 2,000,000 hundred weight of fruit. Since then the number of trees has increased very much. In some districts there are from eighty thousand to one hundred thousand fruit trees upon a square mile. The city of Stuttgart counts upon a horticultural area of five thousand four hundred and forty-five acres, about one hundred and ten thousand fruit trees. The crops in different years vary from 590,000 to 19,400,000 sei, (three sei per hundred

weight,) and as the price per hundred weight varies between one and three thalers, gold, (about one dollar to three dollars of our currency,) the average crop of fruit represents a value of six to seven millions of thalers.

The greatest danger to fruit crops lies in the spring frosts during the blooming season; yet as this season varies nearly four weeks in the different sections, it is easily understood that frequently one county has plentiful crops, whilst another has a failure, but general failures are rare. For the same reason it is evident that the warmest districts are not the most favorable for fruit cultivation, as the earlier the time for blooming, the greater is the danger of frosts; and for the same reason it is exceptional when good fruit and wine crops are produced the same season, as the former prospers best under late vegetation and a wet summer, while wine requires early vegetation and a dry and warm season.

The yield of cider and dried fruits is considered with us as of great importance, but table fruit is also extensively cultivated in some sections, *i. e.*, "Rems hal," "Neckar shal." The apple crop is the most useful of all. There is also some export of this crop, as well as of fresh cherries, into Bavaria.

The cherry tree is among the stone fruit most cultivated in the valleys of the Alb and Rems. The prune tree* (*Zwetschenbaum*) is very common all over the country, and yields the most valuable fruit for drying. The year 1868 abounded in all kinds of stone fruit, especially prunes. The walnut tree (English walnut) prospers most on the slopes of the Alb, and yields good crops and fine cabinet wood. Peaches and apricots are raised in vineyards and gardens, in the former as standards, in the latter as wall fruit.

A great advantage and ornament is derived from the planting of fruit trees all along the roads of the country, the trees being mostly owned by neighboring farmers.

To promote pomology there are several nurseries, and in the vineyards there are raised a great many young fruit trees, yet the demand is greater than the supply, and there are every year great quantities imported from Bavaria, Baden, and France.

The tree fairs every spring in Esslingen, Rentlingen, Goepplingen, and Stuttgart are interesting and peculiar features of Wurtemberg. The prices of young trees vary considerably. Trees which, from 1848 to 1852, sold at six to ten kreutzer (three to five cents) each, now sell at one to one and a-half gulden, (thirty to forty-five cents.) The average price of young apple trees is forty-two kreutzer (twenty-five cents) each; pear trees forty-eight kreutzer, (twenty-eight cents;) cherry or prune trees eighteen kreutzer, (ten cents,) varying with the quality of the tree.

Some years ago a school for pomology was established, which proves of great value.

The greatest portion of the fruit crop is used for cider, the favorite beverage of the farmer. This cider keeps very long, if made of certain species, as, for instance, the orange pear, wax pear, roast pear, sugar apple, Borsdorfer apple, Reine-Hen apple, &c.

In unfavorable years, and even in average years, during the last decennium, large quantities of fruit have been imported from Switzerland, Baden, and Hessen, to answer the steadily increasing demand for cider. Esslingen alone produces in good years 10,000 eimer, (800,000 gallons,) mostly of sugar apple. A sugar apple tree is known to have yielded from eighty to one hundred sei (twenty-six to thirty-three hundred weight) of apples, at a value of 600 to 1,000 gulden, (\$300 to \$500.)

The industry of distilling liquor from cherries and prunes (*kirshengerst* and *zwetschenggeist*) is also lucrative and important.

EXHIBITION OF AGRICULTURAL IMPLEMENTS AT ARNHEIM.

During the session of the agricultural congress of the Netherlands there will be held at Arnheim, in June, July, and August of the current year, an international exposition of agricultural machinery and implements, the first of the kind held in the Netherlands. All kinds of agricultural implements will be admitted, as well as those applicable to horticulture, forest arboriculture, live stock, and dairy produce, with plans and designs explanatory of articles exhibited.

Foreign exhibitors must be represented by local agents living in the Netherlands, and it is requested that the secretary of the committee be notified by mail before the 1st of May of the intention to exhibit, with the

*Our prune tree does not prosper in America, neither from seed nor from imported cuttings, but always degenerates into *damsons*.

sale price of the article and an exact description of the object, the length, breadth, and height given in meters.*

Articles must be forwarded without cost to the committee, so as to be placed in the exposition from the 1st to the 15th of June. Exhibitors will be allowed by the committee to set their machinery in motion at their own expense. A moderate rent will be charged for the space occupied.

The committee will take care of articles without guarantee against damage or loss, but will insure articles against fire.

The Exposition will be opened to the public on the 27th of June, and continue open daily until the 14th of August. On the day after the close of the Exposition exhibitors will remove articles not sold, and such as are not so removed before the 1st of September will be stored at the expense of the exhibitor. Articles not claimed by the 10th of September will be sold at auction, and the proceeds be devoted to the support of the poor of the city.

All sales must be made by the committee, and for cash. By authority of the King, the committee propose to organize a lottery for the sale of articles bought at the exposition, twenty-five thousand lots at one florin each.

Honorary diplomas will be given to a limited number of exhibitors designated by the jury.

Detailed particulars may be obtained by addressing the secretary, J. Nagel jr., Arnheim; or A. Mazel, minister of the Netherlands, Washington, D. C.

CATTLE PLAGUE IN EUROPE.

The intelligence received from eastern Europe relative to the extent and progress of the cattle plague is far from being reassuring. It was hoped that all danger had passed with reference to an extension of the malady from the western and southwestern parts of Poland into Prussian Silesia, but recent information shows that the Prussian government has found it necessary to extend its precautionary measures in that direction, and to have the frontier guarded by troops from Neuberun, in Silesia, to Weischin, in the department of Posen. Not only is Prussia threatened by an invasion of the disease in her southeastern provinces, but also in her northeastern, as the plague has extended in Russia as far northward as Kuovno. To meet this new source of danger the government has dispatched troops to guard the frontier from Tilsitt to Pillkallen, in East Prussia. Poland is suffering to a great extent from this visitation of the plague, as is likewise Galdicia, Transylvania, and Bukowaria.

SCIENTIFIC NOTES UPON NATURAL HISTORY.

The following items are from scientific sources in recent foreign publications:

DREDGING THE ATLANTIC.—In August, 1869, some very curious facts were communicated to the British association, respecting the bed of the Atlantic, by Professor Thomson. He started on an expedition from Belfast for the purpose of determining, if possible, the great questions of

* Meter, 39 inches.

the distribution of temperature, &c., and of the conditions suitable to the existence of animal life at great depths in the ocean.

After leaving Cork the vessel stood out two hundred miles to the southwest of Ushant, with admiralty soundings marked at two thousand fathoms. At a depth of two thousand four hundred and thirty-five fathoms Atlantic chalk mud was met with, and a temperature of 36.5° Fahrenheit noted. At another dredge, at a depth of two thousand fathoms, the temperature was 36.4°.

The results obtained are among the most interesting that have been made in natural science. In reference to temperature Professor Thomson says:

The superheating of the sun extends only to the depth of about twenty fathoms. Another cause of superheating, probably the Gulf Stream, extends to the depth of from five hundred to seven hundred fathoms; after that the temperature gradually sinks at the rate of 0.2° (two-tenths of a degree) for every two hundred fathoms. This is, probably, the normal rate of decrease, any deviation being produced by some special cause, a warm or cold current.

In regard to the aëration of the water, Mr. Hunter, who accompanied Professor Thomson, states that he found the water from great depths to contain a large excess of carbonic acid, and that the water from all depths contained a considerable proportion of dissolved organic matter, thus in every way bearing out the observations of Mr. Carpenter during the first cruise for this object.

As to the distribution of animal life he remarks:

Life extends to the greatest depths, and is represented by all the marine invertebrate groups. At two thousand four hundred and thirty-five fathoms we got a handsome *dentalium*, one or two crustaceans, several annelids and zephyrea, a very remarkable new crinoid with a stem four inches long, (I am not prepared to say whether a mature formed or a *pentacrinoid*), several star fishes, two hydroid zoophytes, and many foraminifera; still the fauna has a dwarfed and Arctic look. This is, doubtless, from the cold. At eight hundred to nine hundred fathoms, with a temperature of 40° Fahrenheit and upward, the fauna is rich, and specially characterized by the great abundance of vitreous sponges, which seem to be nearly related to, if not identical with, the *ventriculites* of the chalk.

The result of the year's work has been to bring to light many forms new to science, and many new to the British fauna. Among the most remarkable groups I have been working at I may mention a very singular *echinoderm*, representing a totally new group of the sub-kingdom, a splendid new *ophiurid*, many specimens of Sars' *rhizocrinos loffoensis*, many vitreous sponges, including specimens of *aphrocallistes*, *holtenies*, and *hyalomena*, a fine *solarium* from the coast of Kerry, and many other things.

The results of Professor Thomson's researches entirely upset the long-maintained opinion that animal life was impossible at great depths in the ocean.

FLOATING TUNICATES OF THE ATLANTIC.—In an interesting paper on the tunicated animals of the Atlantic of the order *salpidae*, Mr. Cuthbert Collingwood describes some beautiful appearances to be observed as follows:

On one occasion when the sea was dead calm, and I was watching the floating tunicates, and fly drozos, though the ship scarcely moved, my attention was arrested by a magnificent object hovering at some distance below the surface. It had the appearance of a long, convoluted, and delicate chain of gems, of the most brilliant colors, which waved gracefully in the currents of water. It might be compared to a necklace of diamonds, set in rubies, and although not the organism to which the name of *cestus veneris* has been given, it might have been the jewelled girdle of Venus falling from her as she rose from the sea. Not far from it was another object, if possible, even of greater beauty, consisting of five or six dolpiform bodies, arranged in oblique line, each of a bright and delicate emerald green color as clear as crystal, and possessing a large red ruby spot, which shone in the water like a row of magnificent carbuncles. There can be no doubt that these exquisite objects were chains of *salpe*, of a character unknown to the scientific naturalist, though they may have often charmed the eyes of the becalmed sailor, and they illustrate the unknown riches and infinite variety of the creatures which lie concealed in the impenetrable depths of the inscrutable ocean.

RISE OF SAP IN TREES AND PLANTS.—The nature of capillary or hair-like attraction, has long been known and satisfactorily studied. It is easily illustrated by placing a lump of loaf sugar in a plate containing a little water, when the liquid will almost instantaneously rise to the sugar, even two or three inches beyond its level. On this principle the rise of sap in plants and trees has been explained. The celebrated philosopher, M. Berquerel, considers that electricity is an acting cause. A capillary tube that will not allow water to pass through it, does so at once on being electrified, and he conceives that electro-capillarity is the efficient cause of sap traveling in vegetable life.

MILK UNDER THE MICROSCOPE.—Apart from the adulteration milk undergoes, there are several changes that unfit it for food. If the surface of fresh cream be examined under the microscope, M. Essling finds that just such appearances are presented as are seen in most substances undergoing putrefaction. In summer such a change takes place in from fifteen to twenty-four hours after milking, and in winter it will be perceptible after the lapse of two or three days. If the observation be continued until the moment of coagulation, the corpuscles increase in number, from ramified chains, and at length are transformed into regular mushrooms or filaments composed of cells placed end to end in simple series, and supporting at their extremities a spherical knob filled with grain-like matter. M. Essling thinks that such may be classed among the *Ascophora*. The first appearance of these spores occurs before the milk gets sour, and as children largely feed on milk it is possible that many of their gastric affections may arise from this cause. The milk of animals should therefore be drunk as soon as possible after being drawn, or kept in close-corked vessels until required for use, so as to be entirely excluded from the external air.

VELOCITY OF INSECTS' WINGS DURING FLIGHT.—M. E. Marey has made some curious investigations on this subject. Much doubt has arisen as to the cause of the humming sound produced by insects, but which is generally supposed to be caused by the vibrations of the wings during flight. To ascertain their velocity, M. E. Marey adopted the following plan: The insect was grasped at the back by a pair of fine nippers, and when it sought to fly one of its wings was directed in such a way that it rubbed its point against the surface of a smoked cylinder which revolved with a known velocity. The wing at each of these revolutions carried away a little of the black smoke which covered the cylinder, and left a trace of its passage. The result of the experiments, allowing in regard to their accuracy for a variety of distracting causes, was to show the following number of beats per second for the wings of each insect: The common fly 330, the drone 240, the bee 190, the wasp 110, the hawk-moth 72, the dragon fly 28, and the cabbage-butterfly, which is inaudible, 9 beats per second. By other variations of the experiments he arrived at similar results.

OYSTER CULTURE.—The enormous price of oysters during the past few years has greatly stimulated their artificial culture. Very recently some interesting experiments have been conducted by Captain Ross, chairman of the Brading Harbor Oyster Fishery Company, at the Isle of Wight. The first attempt was directed to discover the nature of the favorite food of the oyster, and for this purpose two cisterns were fitted up to contain the animal. One of these cisterns was supplied with filtered sea-water, the only vegetable matter present being a few pieces of sea-weed. The other tank was supplied with water direct from the harbor. Another tank was fitted up as a kind of infirmary, to which the parent oyster was committed during the process of its emitting

the "spat," the technical name of its young. The water in this tank was kept perfectly still, and every care was taken to maintain the temperature as uniform as possible; thermometers and other instruments, still more sensitive, were used. Captain Ross tested the effects of electricity by transmitting currents through water containing infusoria, and it was found that their production was rapidly increased by such means. Consequently, a series of constant electrical currents were transmitted through the tanks containing the spat, or young oyster, in the hope that a similar stimulating effect might be produced in relation to its growth and development. The experiments are still in progress, with promise of favorable results.

FACTS FROM VARIOUS SOURCES.

Mr. L. G. Olmstead, of New York, gives the following statement of a simple and convenient method of bleaching beeswax that he saw practiced in Italy:

The yellow wax is first melted in a kettle, and then is dipped out into a long tin vessel that will hold two or three gallons, and which has a row of small holes about the diameter of a knitting needle in the bottom. This vessel is fixed over a cylinder of wood two feet in length and fifteen inches in diameter, which is made to revolve like a grindstone in one end of a trough of water two and one-half feet in width, ten to fifteen feet in length, and one foot in depth. As the melted wax falls in small streams on this wet revolving cylinder it flattens out into a thin ribbon and floats off toward the other end of the trough of water. It is then dipped out with a skimmer, (that may be made of osier twigs,) spread on a table with a top made of small willow rods covered with a clean white cloth, and then exposed in this way to the sun until bleached.

Mr. Legoyt, chief of the department of general statistics of France, in an interesting report published in 1868, upon the agriculture of France at different periods, says that the increase in the production of wheat in 1862, compared with 1840, was thirty three per cent., and the decrease in the production of rye twenty-five per cent. In the same period the average yield of wheat per acre increased from 13.9 to 16.3 bushels, and potatoes were more largely cultivated by thirty-four per cent. The cultivation of the sugar-beet root in France increased from 140,852 $\frac{3}{4}$ acres in 1840 to 336,069 $\frac{6}{7}$ acres in 1862, or one hundred and thirty-eight per cent. It appears from the same report that there are 3,800,000 proprietors of land in France, and that in 1866 there were 3,226,000 farms; of this number fifty-six per cent. contained less than twelve and a half English acres of land. The average extent of all the farms in France (exclusive of forests) was twenty-six and a quarter acres. The number of leased farms in 1862 was 568,000.

Information recently laid before Parliament embraces some interesting facts relating to tenant farms in Ireland. The whole number of farms is 682,000. There are 512,080 farms of less value than £15 a year; 94,098 are valued at £15 and under £30; 38,534 at £30 and under £50; 24,857 at £50 and under £100; 72,668 at £100 and upward. This valuation is supposed to be the basis of poor-rate assessments, and at least twenty per cent. below the actual letting value. Of these farms 526,539 are tenancies at will; lease for twenty-one years or a less term, 25,406; lease exceeding twenty-one and under thirty-one years, 22,217; exceeding thirty-one and under sixty years, 4,312; exceeding sixty and under ninety-nine years, 5,497; exceeding ninety-nine years, 3,903; for lives, 28,339; for lives, alternative, 30,880; renewable forever, 4,540; perpetuity, 10,128; in occupation of proprietors in fee, 20,217.

Forty-two auction sales of shorthorns were held in England, Scotland, and Ireland in 1869, at which 1,585 head were sold at prices ranging from $3\frac{1}{2}$ to 650 guineas. The average realized being £35 5s. each, showing but a slight variation from the average price obtained in 1868, when 1,423 were sold at an average of £35 7s. each.

The highest prices ever known to have been realized in England for shorthorns were obtained by Mr. Sheldon, of Geneva, New York, United States, for six Duchess, sold to Messrs. Wallcott & Campbell, for the sum of 1,100 guineas each.

From statistical reports it appears that in 1868 there were in the Australian colonies 3,915,000 cattle, and 47,600,000 sheep. This number as compared with the number returned in 1867, shows the enormous increase of 4,000,000 of sheep in one year. The latest returns from the Cape of Good Hope give 692,000 cattle and 9,836,000 sheep in that colony. Comparing the number of sheep and the amount of wool exported in 1867, it shows in Australia an average weight of wool exported of 3.75 pounds to each head of sheep, and at the Cape of Good Hope 3.65 pounds per head of sheep.

METEOROLOGY.

COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY THE OBSERVERS OF THE SMITHSONIAN INSTITUTION.

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and amount of rain or melted snow, (in inches and tenths,) for February and March, 1870, at the stations named. Daily observations made at 7 a. m., and 2 and 9 p. m.

| States and stations. | FEBRUARY, 1870. | | | | | | MARCH, 1870. | | | | | |
|------------------------|-----------------|------------|--------|------------|------------|-----------------------|--------------|------------|-------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| MAINE. | | | | | | | | | | | | |
| | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Houlton | 19 | 50 | 4 | -40 | 16.7 | 7.50 | 20 | 56 | 12 | -18 | 26.2 | 5.70 |
| Steuben | 20 | 56 | 4, 14 | -5 | 23.0 | 4.45 | 31 | 51 | 12 | -13 | 29.9 | 4.21 |
| Orono | 15, 19 | 44 | 4 | -15 | 18.2 | 4.30 | 30 | 52 | 12 | -6 | 27.9 | 2.11 |
| Williamsburg | 19 | 43 | 4 | -21 | 16.7 | 6.95 | 20 | 48 | 12 | -15 | 27.3 | 3.45 |
| W. Waterville | 15 | 46 | 4 | -17 | 20.5 | 5.70 | 30 | 50 | 12 | -7 | 29.7 | 3.15 |
| Gardiner | 19 | 46 | 5 | -10 | 21.5 | 5.93 | 30 | 47 | 12 | -2 | 28.6 | 3.25 |
| Lisbon | 15, 20 | 49 | 5 | -12 | 21.9 | 5.30 | 31 | 56 | 12 | 3 | 29.5 | 2.50 |
| Norway | 15, 18 | 42 | 5 | -14 | 18.8 | 6.59 | 30 | 52 | 12 | 0 | 28.4 | 4.60 |
| Cornish | 15 | 46 | 5 | -3 | 20.3 | 5.30 | 30 | 51 | 11 | 4 | 28.0 | 5.15 |
| Cornishville | 18 | 44 | 4, 22 | -2 | 21.3 | 6.40 | 30 | 50 | 11 | 7 | 23.5 | 4.80 |
| Averages | | | | | 19.9 | 5.84 | | | | | 28.4 | 3.89 |
| NEW HAMPSHIRE. | | | | | | | | | | | | |
| Stratford | 15, 18 | 38 | 4 | -12 | 15.4 | 5.19 | 31 | 54 | 12 | -18 | 23.7 | 2.44 |
| Whitefield | 12 | 43 | 4 | -12 | 16.4 | 2.92 | 31 | 55 | 12 | -18 | 24.3 | 2.65 |
| Hanover | 18 | 31 | 22 | -17 | 5.8 | | | | | | | |
| Tamworth | 15 | 52 | 5 | -20 | 18.2 | 7.55 | 30 | 50 | 4 | -4 | 26.8 | 4.38 |
| Concord | 18 | 47 | 4 | -5 | 23.0 | 3.08 | 29 | 54 | 5 | 9 | 30.0 | 3.33 |
| Goffstown Center | 12 | 46 | 22, 25 | 4 | 23.0 | 6.01 | 20 | 60 | 11 | 10 | 29.8 | 3.74 |
| Averages | | | | | 16.9 | 4.95 | | | | | 26.9 | 3.31 |
| VERMONT. | | | | | | | | | | | | |
| Lunenburg | 18 | 44 | 2 | -13 | 15.1 | 5.00 | 31 | 52 | 12 | -15 | 23.9 | 2.01 |
| North Craftsbury | 18 | 40 | 4 | -16 | 13.2 | 5.47 | 20 | 48 | 12 | -10 | 21.9 | 0.95 |
| Newport | 18 | 42 | 4 | -29 | 15.9 | 6.70 | 20, 31 | 50 | 12 | -18 | 23.4 | 1.50 |
| East Bethel | 12 | 44 | 5 | -13 | 17.3 | 4.44 | 30 | 53 | 4 | -4 | 26.5 | 1.39 |
| Woodstock | 18 | 43 | 4, 24 | -9 | 16.1 | 5.21 | 30 | 52 | 4, 6 | -3 | 23.7 | 2.60 |
| Near St. Albans | 18 | 42 | 4 | -29 | 15.0 | | 30, 31 | 51 | 12 | -14 | 23.7 | |
| West Charlotte | 15 | 49 | 4 | -6 | 22.1 | 4.83 | 29, 30 | 52 | 11 | -4 | 29.2 | 2.26 |
| Middlebury | 18 | 42 | 4 | -3 | 19.7 | 3.74 | 31 | 51 | 11 | 4 | 26.8 | 2.11 |
| Panton | 18 | 43 | 4 | -6 | 19.1 | 4.24 | 31 | 50 | 4, 11 | 2 | 25.2 | 2.67 |
| Castleton | 18 | 46 | 4 | -2 | 20.2 | 3.15 | 30, 31 | 51 | 11 | 6 | 27.2 | 2.89 |
| Averages | | | | | 17.4 | 4.75 | | | | | 25.2 | 2.04 |

Table showing the range of the thermometer, &c., for February and March—Continued.

| States and stations. | FEBRUARY, 1870. | | | | | | MARCH, 1870. | | | | | |
|-----------------------|-----------------|------------|-----------|------------|------------|-----------------------|--------------|------------|----------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| MASSACHUSETTS. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Kingston | 18 | 54 | 22, 25 | 7 | 28.5 | 4.00 | 28 | 54 | 6 | 12 | 31.0 | 4.77 |
| Topsfield | 12 | 44 | 4, 14, 25 | 4 | 23.2 | 5.98 | 21, 22 | 50 | 4 | 9 | 29.6 | 4.64 |
| Lawrence | 15 | 45 | 4 | 4 | 22.4 | 3.91 | 22, 30 | 50 | 12 | 13 | 30.3 | 5.72 |
| Newbury | 15 | 50 | 4 | 4 | 25.1 | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| Georgetown | 15 | 46 | 4 | 0 | 23.3 | 7.89 | ----- | ----- | ----- | ----- | ----- | ----- |
| Milton | 18 | 54 | 25 | 9 | 27.1 | 4.64 | 22 | 61 | 4 | 13 | 32.8 | 3.07 |
| Cambridge | 1 | 53 | 22 | 3 | 27.3 | ----- | 21, 22 | 56 | 4 | 13 | 33.8 | ----- |
| North Billerica .. | 15, 18 | 50 | 27 | 3 | 25.5 | ----- | 30 | 52 | 6 | 10 | 31.7 | ----- |
| West Newton | 18 | 54 | 2, 25 | 6 | 27.6 | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| New Bedford | 15 | 52 | 22 | 8 | 28.7 | 4.36 | 20, 22 | 48 | 4 | 13 | 31.6 | 3.16 |
| Worcester | 18 | 50 | 22 | 3 | 25.5 | 3.04 | 31 | 47 | 11 | 10 | 29.3 | 2.24 |
| Mendon | 18 | 52 | 22 | 4 | 23.3 | 3.95 | 21 | 48 | 4 | 12 | 28.2 | 3.60 |
| Lunenburg | 15 | 49 | 25 | 0 | 23.8 | 4.25 | 21 | 54 | 11 | 10 | 30.4 | 4.35 |
| Amherst | 18 | 55 | 25 | 6 | 25.3 | 5.25 | 31 | 51 | 6 | 7 | 30.9 | 2.71 |
| Richmond | 18 | 48 | 25 | 0 | 22.3 | 6.47 | 21 | 56 | 15, 25 | 10 | 29.6 | 7.64 |
| Williams College .. | 12 | 45 | 4 | — 3 | 21.9 | 5.80 | 31 | 50 | 15 | 2 | 26.3 | 4.76 |
| Hinsdale | 18 | 48 | 25 | — 8 | 19.2 | 6.15 | 21 | 50 | 11 | 6 | 23.6 | 5.90 |
| Averages | ----- | ----- | ----- | ----- | 24.7 | 5.05 | ----- | ----- | ----- | ----- | 29.9 | 4.39 |
| RHODE ISLAND. | | | | | | | | | | | | |
| Newport | 15 | 50 | 22, 25 | 11 | 30.2 | 5.32 | 31 | 50 | 4 | 21 | 33.2 | 3.95 |
| CONNECTICUT. | | | | | | | | | | | | |
| Columbia | 7 | 56 | 22 | 6 | 28.3 | 7.22 | 21 | 56 | 4 | 16 | 32.3 | 7.58 |
| Middletown | 18 | 56 | 22 | 6 | 27.1 | 4.86 | 20 | 54 | 6 | 12 | 29.3 | 5.58 |
| Southington | ----- | ----- | ----- | ----- | ----- | ----- | 20, 21 | 53 | ----- | ----- | 36.9 | ----- |
| Colebrook | 18 | 45 | 22 | — 3 | 21.5 | 5.41 | 20 | 52 | 11 | 9 | 26.8 | ----- |
| Brookfield | 18 | 58 | 22 | 8 | 30.8 | 7.80 | 21, 22 | 55 | 3, 4, 17 | 18 | 33.0 | 3.50 |
| Averages | ----- | ----- | ----- | ----- | 26.9 | 6.32 | ----- | ----- | ----- | ----- | 31.7 | 5.55 |
| NEW YORK. | | | | | | | | | | | | |
| Moriches | 15 | 55 | 22 | 8 | 34.8 | 3.61 | 15, 31 | 59 | 6 | 16 | 36.7 | 4.14 |
| South Hartford .. | 12, 18 | 48 | 4 | — 2 | 22.7 | 3.73 | 31 | 59 | 15 | 1 | 29.4 | 3.58 |
| Fort Edward | 7, 17 | 50 | 4 | 2 | 25.3 | ----- | 30 | 63 | 4, 15 | 6 | 32.2 | ----- |
| Vassar College | ----- | ----- | ----- | ----- | ----- | ----- | 31 | 56 | 9 | 5 | 30.4 | ----- |
| Garrison's | 18 | 57 | 22 | 7 | 28.0 | 6.78 | 31 | 56 | 4 | 15 | 34.4 | 5.74 |
| Throg's Neck | 18 | 54 | 22 | 10 | 31.1 | ----- | 31 | 58 | 17 | 18 | 35.1 | ----- |
| White Plains | 12, 15, 20 | 47 | 22 | 11 | 31.2 | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| Deaf & Dumb Ins. .. | 18 | 52 | 22 | 11 | 30.8 | 4.47 | 31 | 54 | 4 | 22 | 35.6 | 4.17 |
| Columbia College .. | 18 | 50 | 21, 22 | 12 | 31.0 | 7.39 | 21 | 54 | 3 | 20 | 33.6 | 2.29 |
| Rutger's Fem. Col. .. | 18 | 60 | 22 | 10 | 34.4 | 4.27 | 21 | 60 | 17 | 20 | 37.1 | 3.25 |
| Flatbush | 15 | 48 | 25 | 13 | 29.7 | 4.27 | 22 | 51 | 2 | 17 | 32.7 | 2.19 |
| Glasco | 12 | 47 | 22 | 6 | 26.7 | 6.84 | 31 | 58 | 6 | 17 | 30.7 | 8.43 |
| Newburg | 18 | 54 | 22 | 8 | 29.9 | 4.50 | 31 | 58 | 6 | 12 | 33.1 | 3.40 |
| Minaville | 18 | 39 | 22 | — 6 | 20.1 | 4.90 | 31 | 52 | 4 | 4 | 25.5 | 6.30 |
| Cooperstown | 18 | 45 | 21 | — 2 | 20.3 | 3.72 | 20 | 55 | 15 | — 8 | 25.0 | 2.53 |
| Gouverneur | 17 | 43 | 4 | — 20 | 17.6 | 2.73 | 20 | 56 | 11 | — 9 | 24.9 | 2.79 |
| North Hammond | 17 | 45 | 4 | — 6 | 18.7 | 3.11 | 31 | 50 | 11, 12 | — 4 | 26.1 | 2.75 |

Table showing the range of the thermometer, &c., for February and March—Continued.

| States and stations. | FEBRUARY, 1870. | | | | | | MARCH, 1870. | | | | | |
|----------------------|-----------------|------------|------------|------------|------------|-----------------------|--------------|------------|----------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| NEW YORK—Con. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Houseville..... | 18 | 42 | 11 | — 6 | 18.1 | 2.87 | 31 | 58 | 11 | — 2 | 25.7 | 3.60 |
| Leyden..... | 18 | 38 | 3, 21 | — 4 | 16.4 | 4.05 | 31 | 45 | 11 | 2 | 23.7 | 4.30 |
| Utica..... | 18 | 41 | 25 | 8 | 24.7 | 5.33 | 30, 31 | 57 | 3 | 8 | 29.8 | 4.09 |
| South Trenton... | 18 | 40 | 11, 13, 25 | 2 | 19.4 | 2.91 | 29 | 50 | 15 | 2 | 24.1 | 4.13 |
| Cazenovia..... | 18 | 42 | 21 | 3 | 22.1 | ..... | 31 | 50 | 3, 15 | 0 | 26.0 | 6.13 |
| Oneida..... | 18 | 46 | 13 | 6 | 24.2 | 5.60 | 20 | 56 | 15 | 5 | 29.1 | 3.40 |
| Depauville..... | 18 | 43 | 4 | — 4 | 19.5 | 4.42 | 20, 30 | 49 | 11 | 2 | 26.0 | 4.68 |
| Oswego..... | 17 | 44 | 21 | 7 | 21.3 | 1.98 | 20 | 46 | 11 | 10 | 28.4 | 2.92 |
| Palermo..... | 17 | 43 | 4 | — 5 | 20.3 | 4.10 | 31 | 52 | 3 | 2 | 25.4 | 3.80 |
| North Volney..... | 17 | 44 | 4 | — 2 | 22.4 | ..... | 31 | 54 | 11 | 7 | 27.6 | ..... |
| Waterbury..... | 17 | 44 | 4 | — 9 | 21.9 | ..... | 30 | 56 | 14 | — 2 | 25.9 | ..... |
| Nichols..... | 12 | 45 | 23 | — 3 | 24.8 | ..... | 31 | 56 | 19 | 1 | 29.0 | ..... |
| Newark Valley... | 18 | 46 | 23 | — 8 | 23.3 | 4.90 | 31 | 54 | 19 | — 8 | 27.2 | 4.80 |
| Himrods..... | 17 | 42 | 4 | — 2 | 22.3 | 4.50 | 31 | 47 | 3 | 5 | 26.2 | 4.13 |
| Rochester (M.)... | 17 | 47 | 19, 21 | 6 | 24.7 | 3.38 | 31 | 51 | 15 | 10 | 29.2 | 4.66 |
| Do.....(F.)... | 17 | 48 | 21 | 2 | 24.0 | 2.67 | ..... | ..... | ..... | ..... | ..... | ..... |
| Little Genesee... | 17 | 43 | 23 | — 16 | 21.5 | 3.98 | 31 | 56 | 19 | — 9 | 26.8 | 4.05 |
| Suspension Bridge | 17 | 48 | 21, 22 | 3 | 25.0 | ..... | 19, 20 | 48 | 19 | 12 | 28.2 | ..... |
| Buffalo..... | 17 | 45 | 21 | 3 | 25.0 | 2.22 | 26 | 55 | 3 | 11 | 30.1 | 5.41 |
| Averages..... | ..... | ..... | ..... | ..... | 24.4 | 4.19 | ..... | ..... | ..... | ..... | 29.1 | 4.14 |
| NEW JERSEY. | | | | | | | | | | | | |
| Paterson..... | 18 | 53 | 22 | 7 | 29.5 | 5.26 | 30 | 58 | 17 | 18 | 34.3 | 5.56 |
| Newark..... | 18 | 53 | 22 | 10 | 30.7 | 4.27 | 21 | 55 | 4 | 18 | 34.8 | 4.56 |
| New Brunswick... | 18 | 57 | 21, 22 | 10 | 30.5 | 3.37 | ..... | ..... | ..... | ..... | ..... | ..... |
| Trenton..... | 18 | 60 | 22 | 12 | 34.8 | 3.20 | 21 | 60 | 3 | 23 | 38.1 | 3.09 |
| Rio Grande..... | 2, 12, 15 | 52 | 22 | 12 | 34.6 | 4.48 | 30 | 52 | 6 | 22 | 36.5 | 5.43 |
| Moorestown..... | 18 | 58 | 22 | 9 | 32.3 | 2.97 | 20, 21 | 60 | 3 | 20 | 35.5 | 3.48 |
| New Germantown | 18 | 54 | 22 | 5 | 29.2 | 2.63 | 30 | 55 | 17 | 16 | 33.1 | 2.64 |
| Lesser Crossroads | 18 | 56 | 22 | 9 | 31.4 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Haddonfield..... | 18 | 59 | 22 | 12 | 33.1 | 2.22 | 21 | 59 | 3 | 22 | 35.8 | 3.91 |
| Newfield..... | 18 | 57 | 22 | 5 | 33.3 | ..... | 20 | 63 | 3, 5, 6 | 21 | 36.3 | ..... |
| Greenwich..... | 18 | 54 | 22 | 12 | 35.0 | 3.01 | 21 | 61 | 3, 5 | 23 | 37.9 | 3.45 |
| Vineland..... | 20 | 58 | 22 | 0 | 33.2 | 2.88 | 21 | 60 | 5 | 23 | 36.5 | 3.10 |
| Averages..... | ..... | ..... | ..... | ..... | 32.3 | 3.43 | ..... | ..... | ..... | ..... | 35.9 | 3.91 |
| PENNSYLVANIA. | | | | | | | | | | | | |
| Nyces..... | 18 | 48 | 21 | — 5 | 22.7 | 3.67 | 30 | 52 | 2 | 7 | 26.7 | 3.93 |
| Hamlington..... | 18 | 52 | 21, 22 | 6 | 27.1 | 3.98 | 20 | 56 | 17 | 14 | 30.3 | 4.15 |
| Dyberry..... | 18 | 49 | 23 | — 2 | 26.8 | 3.75 | 21 | 56 | 19 | 1 | 27.4 | 3.35 |
| Fallsington..... | 18 | 60 | 22 | 10 | 33.0 | 2.60 | 20 | 56 | 6 | 20 | 36.0 | 3.60 |
| Philadelphia..... | 18 | 59 | 22 | 13 | 34.8 | 2.56 | 21 | 61 | 3 | 23 | 37.9 | 4.52 |
| Germantown (M.) | 18 | 58 | 22 | 7 | 32.9 | ..... | 21 | 54 | 3, 9, 17 | 20 | 35.5 | ..... |
| Do.....(T.)... | 18 | 60 | 22 | 12 | 33.3 | 5.43 | 21 | 59 | 3, 4, 9 | 23 | 36.0 | 3.20 |
| Horsham..... | 18 | 56 | 22 | 9 | 31.8 | 3.35 | 21 | 59 | 3 | 21 | 33.6 | 3.53 |
| Plymouth Meet'g. | 18 | 59 | 22 | 10 | 32.0 | 2.89 | 21 | 61 | 3 | 21 | 34.7 | 4.64 |
| White Hall..... | 18 | 54 | 22 | 5 | 30.6 | ..... | 30, 31 | 58 | 17 | 14 | 33.3 | ..... |
| Factoryville..... | 12, 18 | 46 | 23 | — 2 | 24.6 | 4.20 | 31 | 56 | 17 | — 4 | 28.2 | 3.67 |

Table showing the range of the thermometer, &c., for February and March—Continued.

| States and stations. | FEBRUARY, 1870. | | | | | | MARCH, 1870. | | | | | |
|----------------------|-----------------|------------|--------|------------|------------|-----------------------|--------------|------------|----------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| PENN'A.—Con'd. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Reading | 18 | 60 | 22 | 10 | 33.9 | 5.88 | 31 | 60 | 17 | 22 | 37.5 | 4.61 |
| West Chester | 18 | 58 | 22 | 6 | 31.2 | 3.89 | ..... | ..... | ..... | ..... | ..... | ..... |
| Parkersville | 18 | 52 | 22 | 9 | 31.9 | 3.55 | 21 | 54 | 10 | 19 | 35.4 | 2.91 |
| Ashland | 18 | 54 | 22 | 1 | 27.5 | 7.10 | 30 | 61 | 17 | 13 | 32.0 | 4.80 |
| Tamaqua | 18 | 53 | 21 | — 1 | 26.4 | ..... | 21 | 57 | 16 | 5 | 30.5 | ..... |
| Ephrata | 18 | 57 | 22 | 6 | 32.3 | 3.49 | 30 | 56 | 3 | 19 | 34.4 | 3.73 |
| Mount Joy | 13 | 60 | 22 | 12 | 34.1 | ..... | 30 | 67 | 16 | 22 | 38.3 | ..... |
| Harrisburg | 12, 18 | 55 | 22 | 9 | 34.3 | 4.12 | 30, 31 | 62 | 17 | 19 | 39.0 | 3.76 |
| Carlisle | 16, 17 | 50 | 22 | 7 | 31.8 | 4.35 | 21 | 60 | 16, 17 | 19 | 36.7 | 3.95 |
| Fountain Dale | 12 | 51 | 21 | 6 | 31.0 | 3.50 | 21 | 58 | 17 | 17 | 35.5 | 4.22 |
| Tioga | 12, 18 | 48 | 21, 23 | —10 | 23.5 | 3.50 | 31 | 54 | 17 | — 8 | 29.2 | 3.95 |
| Williamsport | 18 | 48 | 22 | 6 | 29.7 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Lewisburg | 12 | 48 | 23 | — 1 | 26.8 | 4.39 | ..... | ..... | ..... | ..... | ..... | ..... |
| Grampian Hills | 17 | 42 | 23 | — 8 | 22.1 | 4.54 | 30 | 50 | 3, 16 | 8 | 27.0 | 3.99 |
| Johnstown | 17 | 50 | 21 | 0 | 28.3 | 5.01 | 11, 30 | 54 | 15, 19 | 14 | 31.0 | 3.92 |
| Franklin | 17 | 49 | 21, 23 | 0 | 25.6 | 4.07 | 30 | 56 | 3 | 12 | 31.7 | 4.58 |
| Pittsburg | 17 | 55 | 21 | 4 | 31.1 | 3.40 | 12 | 57 | 16 | 16 | 35.0 | 3.20 |
| Connellsville | 17 | 55 | 21, 22 | 0 | 28.6 | ..... | 30 | 58 | 16 | 12 | 32.3 | ..... |
| Brownsville | 17 | 60 | 22 | 0 | 31.4 | 1.83 | 30 | 58 | 16 | 17 | 38.0 | ..... |
| New Castle | 14, 17 | 45 | 21 | 3 | 27.1 | 3.20 | 30 | 54 | 16 | 15 | 33.4 | 3.10 |
| Beaver | 16 | 51 | 21 | 5 | 30.4 | 2.80 | 12, 30 | 54 | 16 | 12 | 37.0 | 3.00 |
| Canonsburg | 17 | 54 | 21 | 0 | 30.2 | 3.46 | 30 | 63 | 16 | 11 | 35.3 | 3.25 |
| Averages ..... | ..... | ..... | ..... | ..... | 29.7 | 3.87 | ..... | ..... | ..... | ..... | 33.6 | 3.64 |
| DELAWARE. | | | | | | | | | | | | |
| Milford | 18 | 60 | 22 | 13 | 36.4 | 2.70 | 20 | 62 | 5, 6, 17 | 27 | 39.8 | 3.88 |
| MARYLAND. | | | | | | | | | | | | |
| Woodlawn | 18 | 58 | 22 | 7 | 31.9 | 3.44 | 21 | 61 | 3, 17 | 20 | 35.8 | 3.21 |
| Annapolis | 2 | 56 | 21, 22 | 11 | 37.7 | 4.52 | 21 | 64 | 3, 9, 17 | 24 | 47.6 | 3.17 |
| St. Inigoes | 18 | 60 | 22 | 11 | 35.8 | 2.36 | ..... | ..... | ..... | ..... | ..... | ..... |
| Frederick | 17 | 55 | 21 | 13 | 36.7 | 3.42 | 21 | 65 | 7, 9, 17 | 28 | 42.2 | 1.77 |
| Mt. St. Mary's | 12 | 52 | 21 | 5 | 30.9 | 3.70 | 21 | 60 | 16 | 16 | 36.0 | 3.28 |
| Averages ..... | ..... | ..... | ..... | ..... | 34.6 | 3.49 | ..... | ..... | ..... | ..... | 40.4 | 2.88 |
| DIST. COLUMBIA. | | | | | | | | | | | | |
| Washington | 18 | 52 | 21 | 13 | 38.9 | 3.03 | 21 | 57 | 9, 17 | 26 | 40.3 | 3.70 |
| VIRGINIA. | | | | | | | | | | | | |
| Johnsontown | 15 | 60 | 21, 22 | 17 | 39.7 | 3.10 | 27 | 61 | 6, 10 | 28 | 43.5 | 4.08 |
| Hampton | 18 | 65 | 22 | 16 | 41.5 | 3.10 | 20 | 66 | 3, 9, 10 | 28 | 43.3 | 2.70 |
| Zuni Station | 18 | 68 | 22 | 18 | 42.2 | 3.27 | 27 | 64 | 10 | 26 | 44.1 | 3.61 |
| Bacon's Castle | 18 | 73 | 22 | 16 | 42.1 | 8.93 | ..... | ..... | ..... | ..... | ..... | ..... |
| Comorn | 18 | 60 | 21, 22 | 14 | 37.1 | 1.51 | 20, 21 | 64 | 6 | 27 | 42.2 | 1.78 |
| Vienna (W) | 17 | 55 | 21, 22 | 9 | 36.0 | 2.10 | 21 | 67 | 16, 17 | 23 | 40.3 | 3.70 |
| Do. (B) ..... | ..... | ..... | ..... | ..... | ..... | ..... | 21 | 64 | 17 | 22 | 40.0 | 4.00 |
| Fairfax C. H. | 17 | 60 | 22 | 10 | 32.5 | 2.20 | ..... | ..... | ..... | ..... | ..... | ..... |
| Piedmont | 12, 17 | 54 | 22 | 5 | 34.6 | 2.80 | 21 | 64 | 17 | 16 | 38.3 | 3.70 |

Table showing the range of the thermometer, &c., for February and March—Continued.

| States and stations. | FEBRUARY, 1870. | | | | | | MARCH, 1870. | | | | | |
|------------------------|-----------------|------------|--------|------------|------------|-----------------------|--------------|------------|-----------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| VIRGINIA—Con. | | ° | | ° | ° | <i>In.</i> | | ° | | ° | ° | <i>In.</i> |
| Piedmont Station. | 2 | 56 | 22 | 1 | 30.7 | 2.55 | 21 | 67 | 17 | 18 | 30.2 | 5.35 |
| Staunton..... | 26 | 57 | 21, 22 | 11 | 36.1 | 2.30 | 21 | 60 | 17 | 19 | 39.1 | 3.66 |
| Lexington..... | 26 | 70 | 22 | 0 | 40.0 | 2.21 | 21 | 71 | 17 | 19 | 43.1 | 3.50 |
| Lynchburg..... | 15 | 55 | 21 | 17 | 40.4 | ..... | 21 | 64 | 16 | 30 | 44.2 | 3.10 |
| Snowville..... | 26 | 66 | 22 | — 1 | 33.9 | 6.56 | 19 | 66 | 17 | 10 | 37.5 | 3.25 |
| Wytheville..... | 2 | 54 | 21 | 5 | 34.7 | 3.00 | 20 | 60 | 17 | 10 | 37.3 | 4.30 |
| Averages..... | | | | | 37.3 | 3.36 | | | | | 40.9 | 3.59 |
| WEST VIRGINIA. | | | | | | | | | | | | |
| Weston..... | | | | | | | 30 | 64 | 16 | 8 | 36.1 | ..... |
| Cabell C. H..... | 12, 13 | 54 | 21 | 12 | 37.0 | 2.80 | | | | | | |
| NORTH CAROLINA. | | | | | | | | | | | | |
| Kenansville..... | 27 | 76 | 21 | 22 | 47.1 | ..... | 13, 30 | 70 | 10 | 28 | 50.7 | ..... |
| Goldsboro..... | 14, 18 | 71 | 21 | 19 | 46.4 | 4.60 | 22 | 76 | 10 | 29 | 49.5 | 2.30 |
| Warrenton..... | 12 | 62 | 21, 22 | 12 | 39.8 | 4.15 | 30 | 63 | 10 | 26 | 42.6 | 3.45 |
| Oxford..... | 12 | 66 | 22 | 17 | 43.0 | 4.20 | 30 | 68 | 9 | 26 | 46.3 | 2.35 |
| Chapel Hill..... | 15 | 68 | 20 | 18 | 44.0 | ..... | 21, 22 | 70 | 9 | 27 | 47.7 | ..... |
| Albemarle..... | 26 | 73 | 21 | 9 | 40.9 | 3.66 | 21 | 73 | 10 | 16 | 44.1 | 7.05 |
| Statesville..... | 26 | 62 | 21 | 8 | 36.7 | 2.94 | 21 | 67 | 10, 17 | 18 | 41.6 | 8.00 |
| Asheville (A.)... | 26 | 64 | 21 | 7 | 38.8 | 2.20 | 29 | 68 | 17 | 14 | 42.1 | 4.55 |
| Do....(H.).... | 26 | 66 | 21 | 4 | 38.5 | ..... | 20, 29 | 68 | 17 | 10 | 41.9 | ..... |
| Averages..... | | | | | 41.7 | 3.63 | | | | | 45.2 | 4.62 |
| SOUTH CAROLINA. | | | | | | | | | | | | |
| Aiken..... | 26 | 70 | 21 | 15 | 46.6 | 2.77 | 21, 29 | 73 | 17 | 26 | 52.5 | 6.05 |
| Holland's Store.. | 26 | 68 | 21 | 16 | 46.0 | 6.98 | 29 | 78 | 10 | 25 | 51.5 | 10.10 |
| Gowdeysville.... | 26 | 68 | 21 | 16 | 44.1 | 4.45 | 20, 22 | 69 | 9 | 23 | 48.7 | 7.58 |
| Bluffton..... | 27 | 76 | 21 | 32 | 53.8 | 2.20 | 21 | 74 | 10 | 38 | 57.7 | 5.30 |
| Fort Mill..... |  |  |  |  |  | ..... | 21 | 68 | 18 | 26 | 47.1 | ..... |
| Averages..... | | | | | 47.6 | 4.10 | | | | | 51.5 | 7.26 |
| GEORGIA. | | | | | | | | | | | | |
| Berne..... | 27 | 74 | 21 | 26 | 49.5 | 3.80 | 29 | 75 | 9, 10, 18 | 32 | 54.3 | 5.50 |
| Penfield..... | 26 | 68 | 21 | 14 | 44.7 | 3.50 | 29 | 76 | 9 | 25 | 49.5 | 7.70 |
| Atlanta..... | 26 | 65 | 21 | 10 | 40.4 | 6.50 | | | | | | |
| Averages..... | | | | | 44.9 | 4.60 | | | | | 51.9 | 6.60 |
| ALABAMA. | | | | | | | | | | | | |
| Rockville..... | 14 | 69 | 21 | 15 | 46.3 | 4.88 | 20, 29 | 72 | 9 | 24 | 50.6 | 8.25 |
| Carlowville..... | 14 | 72 | 21 | 22 | 49.1 | 6.57 | 29 | 74 | 9 | 32 | 59.3 | 7.87 |
| Selma..... | 14 | 72 | 21 | 24 | 51.9 | 5.25 | 12 | 73 | 9, 16 | 31 | 55.1 | 6.15 |
| Greene Springs... | 14 | 69 | 21 | 19 | 49.5 | 4.74 | 29 | 74 | 9 | 26 | 51.6 | 5.65 |
| Coatopa..... | 14 | 72 | 21 | 22 | 50.1 | 4.40 | 29 | 77 | 9 | 28 | 53.3 | 7.50 |
| Fish River..... | 14 | 70 | 21 | 30 | | | 22 | 76 | 9, 16 | 33 | | 6.35 |
| Mobile..... | 12, 13, 15 | 68 | 19, 20 | 25 | 50.9 | 3.30 | | | | | | |
| Averages..... | | | | | 49.6 | 4.86 | | | | | 54.0 | 6.96 |

Table showing the range of the thermometer, &c., for February and March—Continued.

| States and stations. | FEBRUARY, 1870. | | | | | | MARCH, 1870. | | | | | |
|----------------------|-----------------|------------|--------|------------|------------|-----------------------|--------------|------------|-------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| FLORIDA. | | ° | | ° | ° | <i>In.</i> | | ° | | ° | ° | <i>In.</i> |
| Port Orange | 15 | 79 | 21 | 34 | 52.3 | ----- | 12 | 82 | 9, 17 | 43 | 61.6 | ----- |
| Jacksonville | 27 | 80 | 21 | 28 | 55.5 | 2.25 | 29 | 84 | 9 | 38 | 61.2 | 5.40 |
| Pilatka | 27 | 78 | 21 | 30 | 56.3 | 5.29 | 6, 29 | 84 | 19 | 36 | 61.8 | 6.36 |
| Ocala | 17 | 79 | 21, 25 | 32 | ----- | ----- | 2, 29 | 86 | 18 | 28 | 62.1 | ----- |
| Manatie | 2, 15 | 78 | 19, 22 | 40 | 61.7 | 2.20 | 5, 22 | 80 | 19 | 46 | 66.2 | 4.40 |
| Averages | | | | | 56.5 | 3.25 | | | | | 62.6 | 5.39 |
| TEXAS. | | | | | | | | | | | | |
| Gilmer | 16 | 82 | 20 | 22 | 54.5 | 0.53 | 4 | 83 | 15 | 22 | 59.8 | 1.82 |
| Houston | 15, 16 | 83 | 20 | 34 | 58.1 | ----- | 5 | 89 | 16 | 29 | 63.1 | ----- |
| Palestine | 16 | 82 | 20 | 20 | 55.0 | 0.52 | 4 | 83 | 15 | 21 | 57.5 | 0.50 |
| Blue Branch | 15, 16, 28 | 80 | 20 | 28 | 57.5 | 0.30 | 11 | 82 | 15 | 28 | 56.7 | 1.90 |
| Lavacca | 23 | 88 | 18 | 30 | 57.9 | 1.00 | 6 | 80 | 15 | 32 | 60.8 | 1.80 |
| Clinton | 16 | 83 | 18, 20 | 30 | 57.7 | 0.90 | 11 | 83 | 16 | 29 | 63.8 | 3.60 |
| Austin | 22 | 85 | 20 | 27 | 55.4 | 0.58 | 11 | 83 | 15 | 29 | 59.5 | 2.29 |
| Lockhart | 25, 28 | 79 | 20 | 25 | 54.7 | ----- | 11, 14, 28 | 80 | 16 | 26 | 58.8 | 3.00 |
| Averages | | | | | 56.4 | 0.64 | | | | | 60.0 | 2.13 |
| LOUISIANA. | | | | | | | | | | | | |
| New Orleans | 28 | 80 | 21 | 29 | 55.0 | 2.12 | 4 | 78 | 16 | 32 | 57.4 | 2.37 |
| Shreveport | 16, 28 | 76 | 20 | 21 | 53.0 | ----- | 4 | 80 | 15 | 26 | 55.7 | ----- |
| Averages | | | | | 54.0 | 2.12 | | | | | 56.6 | 2.37 |
| MISSISSIPPI. | | | | | | | | | | | | |
| Columbus | 14 | 69 | 21 | 20 | 47.1 | 3.88 | 29 | 71 | 9 | 30 | 51.1 | 5.54 |
| Enterprise | 1, 14 | 71 | 21 | 24 | 50.0 | ----- | 6 | 76 | 9, 10 | 30 | 52.8 | ----- |
| Marion C. H. | 12 | 76 | 21 | 18 | 48.8 | 3.70 | 29 | 76 | 9 | 28 | 56.1 | 5.30 |
| Philadelphia | 14 | 70 | 21 | 19 | 49.1 | 2.50 | 28 | 73 | 16 | 30 | 52.2 | 5.13 |
| Brookhaven | 15 | 73 | 21 | 24 | 51.4 | 1.68 | 6 | 74 | 9 | 27 | 53.2 | 7.90 |
| Near Brookhaven. | 14, 15 | 75 | 21 | 25 | 50.6 | 1.60 | 28 | 77 | 18 | 28 | 54.5 | 6.30 |
| Natchez | 16, 28 | 73 | 21 | 22 | 47.7 | 1.67 | 4 | 74 | 9 | 29 | 56.8 | 5.39 |
| Averages | | | | | 49.2 | 2.51 | | | | | 53.8 | 5.93 |
| ARKANSAS. | | | | | | | | | | | | |
| Helena | 15 | 69 | 20 | 14 | 46.4 | ----- | | | | | | |
| TENNESSEE. | | | | | | | | | | | | |
| Elizabethton | 14 | 71 | 21 | 6 | 44.5 | 3.22 | 20 | 68 | 17 | 12 | 41.8 | 3.40 |
| Tusculum Coll'ge. | 14 | 66 | 21 | 6 | 40.3 | 1.90 | 21 | 64 | 18 | 24 | 41.9 | 2.80 |
| Knoxville | 11 | 67 | 21 | 5 | 39.7 | 3.60 | 21, 29 | 69 | 17 | 11 | 44.2 | 6.09 |
| Lookout Mount'n | 12 | 68 | 21 | 5 | 41.0 | ----- | 29 | 67 | 17 | 18 | 45.7 | ----- |
| Austin | 11, 26 | 66 | 21 | 8 | 41.4 | 5.15 | | | | | | |
| Clarksville | 14 | 66 | 20 | 7 | 40.3 | 3.03 | 29 | 71 | 17 | 15 | 43.8 | 3.47 |
| Trenton | 26 | 67 | 20 | 10 | 43.8 | 4.41 | 12 | 67 | 9, 17 | 25 | 48.0 | 4.30 |
| Memphis | 14 | 69 | 20 | 12 | 43.1 | 4.69 | 28 | 71 | 15 | 26 | 47.1 | 5.65 |
| Averages | | | | | 41.8 | 3.71 | | | | | 44.6 | 4.27 |

Table showing the range of the thermometer, &c., for February and March—Continued.

| States and stations. | FEBRUARY, 1870. | | | | | | MARCH, 1870. | | | | | |
|----------------------|-----------------|------------|-------|------------|------------|-----------------------|----------------------|------------|--------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| KENTUCKY. | | | | | | | | | | | | |
| | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Pine Grove..... | 14 | 57 | 21 | — 2 | 33.7 | 4.17 | 25 | 62 | 17 | 10 | 38.0 | 5.34 |
| Danville..... | 11, 12 | 64 | 21 | 1 | 38.7 | 3.68 | 25 | 68 | 17 | 21 | 44.7 | 3.63 |
| Shelby City..... | 11 | 63 | 21 | — 2 | 36.5 | 3.88 | 25 | 68 | 17 | 12 | 40.9 | 3.82 |
| Louisville..... | 26 | 61 | 21 | 3 | 36.5 | | | | | | | |
| Near Louisville .. | 26 | 60 | 21 | 3 | 36.2 | 2.68 | 25 | 67 | 17 | 14 | 40.7 | 5.32 |
| Averages..... | | | | | 36.3 | 3.60 | | | | | 41.1 | 4.53 |
| OHIO. | | | | | | | | | | | | |
| New Lisbon..... | 17 | 56 | 21 | — 3 | 29.0 | 3.10 | 11, 26 | 50 | 16, 17 | 16 | 30.8 | 4.09 |
| Salem..... | 14 | 46 | 21 | — 2 | 29.3 | 2.60 | 30 | 62 | 17 | 15 | 34.5 | 3.97 |
| Stenbenville..... | 12 | 51 | 22 | 9 | 32.0 | 3.51 | 30 | 58 | 17 | 17 | 37.0 | 3.86 |
| Painesville..... | 11 | 44 | 21 | 3 | 26.4 | 2.78 | 30 | 51 | 16 | 13 | 31.1 | 2.94 |
| Milnersville..... | 16 | 53 | 19 | — 4 | 30.0 | | 30 | 62 | 17 | 14 | 32.6 | 5.20 |
| Cleveland..... | 11 | 45 | 21 | 4 | 26.5 | 1.68 | 26 | 53 | 16 | 9 | 32.0 | 2.10 |
| Wooster..... | | | | | | | 30 | 62 | 16 | 4 | 35.7 | |
| Gallipolis..... | 14 | 62 | 21 | 3 | 34.1 | 3.15 | 20 | 64 | 17 | 14 | 39.4 | 4.65 |
| Oberlin..... | 11 | 48 | 21 | — 2 | 29.5 | | { 19, 26 30, 31 } | 49 | 16 | 7 | 32.1 | 3.60 |
| Kelley's Island..... | 11 | 43 | 21 | 0 | 27.7 | 1.00 | | | | | | |
| Sandusky..... | 11 | 45 | 21 | 1 | 25.5 | 1.22 | 20 | 51 | 16 | 13 | 33.2 | 3.55 |
| North Fairfield .. | 11 | 46 | 21 | — 4 | 27.7 | 1.82 | 25, 30 | 53 | 16 | 8 | 33.6 | 2.92 |
| Gambier..... | 11 | 47 | 21 | — 4 | 28.2 | 3.00 | 30 | 58 | 16, 17 | 18 | 34.8 | 4.87 |
| Westerville..... | 11, 26 | 51 | 21 | 0 | 30.9 | 3.00 | | | | | | |
| Williamsport..... | 26 | 56 | 21 | 0 | 32.2 | 4.04 | | | | | | |
| N. Bass Island .. | 11 | 45 | 21 | — 2 | 27.2 | 1.76 | 19 | 51 | 16 | 11 | 31.8 | 4.60 |
| Marion..... | 11, 26 | 46 | 21 | — 3 | 27.0 | 2.06 | 31 | 57 | 15, 16 | 15 | 33.7 | 3.63 |
| Hillsboro..... | 26 | 54 | 21 | — 2 | 31.5 | 3.13 | 20 | 58 | 17 | 12 | 35.8 | 3.78 |
| Toledo..... | 11 | 48 | 21 | — 4 | 28.1 | 1.69 | 19 | 50 | 16 | 10 | 32.7 | 3.31 |
| Bowling Green.... | 11, 15 | 47 | 21 | — 5 | 28.3 | 1.40 | 19, 25 | 51 | 16 | 5 | 34.0 | 4.00 |
| Kenton..... | 12 | 48 | 21 | — 2 | 31.5 | 1.98 | 22, 30 | 48 | 17 | 25 | 35.4 | 7.70 |
| Urbana..... | 26 | 55 | 21 | — 7 | 29.1 | 2.07 | 25 | 58 | 15, 16 | 12 | 35.3 | 4.26 |
| Bethel..... | 26 | 55 | 21 | — 3 | 32.8 | 3.75 | 25 | 59 | 17 | 11 | 36.7 | 4.80 |
| Jacksonburg..... | 11, 26 | 56 | 21 | — 4 | 31.6 | 2.75 | 25 | 58 | 15, 17 | 14 | 36.2 | 4.21 |
| Mt. Auburn Inst. | 14 | 59 | 21 | — 4 | 32.6 | 2.06 | { 12, 20 25 } | 58 | 17 | 14 | 38.0 | 4.73 |
| Cincinnati... (H). | 14 | 59 | 21 | 0 | 33.0 | 1.55 | 25 | 69 | 17 | 16 | 39.0 | 3.26 |
| Do..... (P). | 11 | 58 | 20 | 7 | 33.1 | 2.98 | 31 | 64 | 17 | 15 | 40.7 | 4.80 |
| College Hill..... | 14 | 54 | 21 | — 4 | 31.4 | 1.74 | 12 | 57 | 17 | 12 | 35.1 | 4.50 |
| Averages..... | | | | | 29.9 | 2.39 | | | | | 34.8 | 4.14 |
| MICHIGAN. | | | | | | | | | | | | |
| Detroit..... | 11 | 41 | 21 | — 9 | 23.6 | 2.08 | 19 | 47 | 5 | 0 | 29.9 | 3.40 |
| Monroe City..... | 11 | 48 | 21 | — 7 | 27.8 | 0.70 | 10 | 50 | 16 | 8 | 32.8 | 2.00 |
| Adrian..... | 11 | 45 | 21 | — 12 | 22.1 | 2.48 | 19 | 50 | 16 | — 4 | 28.1 | 3.63 |
| Alpena..... | 7, 9 | 34 | 22 | — 3 | 20.8 | 3.00 | | | | | | |
| State Ag'l College | 7 | 44 | 21 | — 13 | 24.3 | 1.20 | 17, 18 | 50 | 18 | 10 | 30.3 | 3.01 |
| Litchfield..... | 11 | 47 | 21 | — 18 | 23.3 | 2.10 | 20 | 52 | 16 | 2 | 29.2 | 3.60 |
| Coldwater..... | 11 | 49 | 21 | — 11 | 25.1 | 1.00 | 20 | 50 | 15, 16 | 6 | 30.1 | 4.13 |
| Grand Rapids..... | 11 | 48 | 21 | — 10 | 25.5 | | 19 | 49 | 16 | 1 | 30.7 | 2.71 |
| Northport..... | 11 | 40 | 22 | — 12 | 20.4 | 1.30 | 24 | 49 | 3 | — 4 | 27.2 | 2.53 |

Table showing the range of the thermometer, &c., for February and March—Continued.

| States and stations. | FEBRUARY, 1870. | | | | | | MARCH, 1870. | | | | | |
|----------------------|-----------------|------------|--------|------------|------------|-----------------------|--------------|------------|--------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| MICHIGAN—Con'd. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Benzonia..... | 7 | 41 | 22 | -12 | 21.8 | ..... | 31 | 49 | 3 | 0 | 29.0 | ..... |
| Homestead..... | 16 | 42 | 22 | -16 | 24.5 | ..... |  |  |  |  |  |  |
| Pleasanton..... | 11 | 45 | 22 | -12 | 19.9 | 2.85 | 28 | 54 | 3 | -2 | 28.5 | 3.25 |
| Muskegon..... | 16 | 48 | 21 | -2 | 26.7 | 0.95 | 30, 31 | 58 | 16 | 4 | 34.5 | 3.90 |
| Otsego..... | 16, 18 | 54 | 21 | 0 | 32.0 | ..... | 28 | 58 | 8 | 18 | 38.3 | ..... |
| Copper Falls..... | 11 | 38 | 20 | -18 | 12.1 | 5.75 | 24 | 43 | 11 | -4 | 22.9 | 1.30 |
| Ontonagon..... | 11 | 40 | 20, 21 | -24 | 15.1 | ..... | 24 | 46 | 12 | -14 | 23.4 | ..... |
| Averages..... | | | | | 22.8 | 2.13 | | | | | 29.6 | 3.04 |
| INDIANA. | | | | | | | | | | | | |
| Aurora..... | 11 | 58 | 21 | 2 | 33.0 | 2.59 | 25 | 62 | 17 | 12 | 38.6 | 3.52 |
| Vevay..... | 11, 26 | 58 | 21 | 2 | 34.4 | 2.47 | 25 | 62 | 16, 17 | 16 | 39.1 | 3.93 |
| Mount Carmel... | 11, 14 | 52 | 21 | 0 | 30.5 | 2.00 | 12, 25 | 56 | 16 | 12 | 36.1 | 3.05 |
| Muncie..... | 26 | 58 | 21 | -6 | 28.7 | 1.50 | 24 | 63 | 15 | 14 | 36.0 | 2.85 |
| Spiceland..... | 11 | 55 | 21 | -7 | 29.7 | 1.31 | 25 | 59 | 16 | 10 | 35.3 | 3.00 |
| Laconia..... | 11, 26 | 62 | 21 | -3 | 34.5 | 2.43 | 25, 30 | 66 | 17 | 11 | 40.1 | 3.81 |
| Columbia City... | 10 | 54 | 21 | -5 | 29.8 | 0.70 | | | | | | |
| Knightstown... | 11 | 56 | 21 | -10 | 29.1 | 1.28 | 25 | 60 | 16 | 12 | 37.0 | 2.37 |
| Indianapolis..... | 11 | 58 | 21 | -8 | 32.6 | 1.08 | 25 | 65 | 16 | 12 | 36.6 | 2.77 |
| La Porte..... | 16, 25 | 47 | 20 | -2 | 23.2 | 1.35 | 29 | 62 | 15, 16 | 4 | 33.2 | 2.90 |
| Rensselaer..... | 26 | 52 | 21 | -9 | 26.6 | 1.60 | | | | | | |
| Merom..... | 11, 14 | 62 | 21 | -3 | 32.6 | 1.90 | 25 | 62 | 17 | 10 | 38.1 | 2.63 |
| New Harmony... | 11, 26 | 56 | 21 | 3 | 35.4 | 2.55 | 12 | 63 | 17 | 14 | 41.3 | 2.31 |
| Harveysburg... | 11 | 56 | 21 | -12 | 28.4 | 0.80 | 25 | 58 | 16, 17 | 10 | 33.7 | 3.30 |
| Averages..... | | | | | 30.6 | 1.68 | | | | | 37.1 | 3.04 |
| ILLINOIS. | | | | | | | | | | | | |
| Chicago..... | 11 | 50 | 20 | -8 | 30.0 | 0.86 | 24 | 53 | 15 | 10 | 35.1 | 1.81 |
| Near Chicago... | 11 | 47 | 20, 21 | -4 | 23.6 | ..... | 25 | 42 | 16 | 5 | 30.4 | ..... |
| Evanston..... | 11 | 46 | 20 | -7 | 26.9 | 1.25 | 25 | 45 | 16 | 8 | 31.9 | 3.24 |
| Marengo..... | 11 | 45 | 20 | -13 | 23.3 | 0.59 | 25 | 52 | 16 | -2 | 29.3 | 4.43 |
| Mattoon..... | 14 | 51 | 20 | -6 | 28.8 | 0.93 | 25 | 55 | 16, 17 | 12 | 34.7 | 3.00 |
| Aurora..... | 26 | 48 | 21 | -11 | 24.3 | 2.45 | 25 | 53 | 16 | 3 | 30.3 | 1.92 |
| Louisville..... | 11, 14 | 64 | 20, 21 | -20 | 31.7 | 1.30 | 30 | 66 | 17 | 12 | 40.0 | 3.70 |
| Golconda..... | 17 | 69 | 21 | -2 | 39.5 | 7.50 | 31 | 79 | 17 | 10 | 39.3 | 4.60 |
| Belvidere..... | 11 | 45 | 20 | -12 | 23.0 | 0.78 | 25 | 53 | 16 | -2 | 29.5 | 3.69 |
| Sandwich..... | 26 | 50 | 21 | -12 | 25.9 | 1.10 | | | | | | |
| Ottawa..... | 26 | 57 | 20 | -3 | 29.6 | 0.70 | 25 | 62 | 15 | 2 | 35.1 | 3.28 |
| Decatur..... | 26 | 59 | 20 | -6 | 28.5 | 0.95 | 25 | 62 | 16 | 9 | 34.7 | 2.97 |
| Pana..... | 26 | 51 | 20 | -4 | 30.3 | 0.30 | 25 | 63 | 15 | 10 | 36.3 | 2.70 |
| Winnebago..... | 11 | 47 | 20 | -11 | 22.3 | 0.75 | 25 | 49 | 16 | -3 | 27.6 | 3.41 |
| Rochelle..... | 11, 16, 26 | 47 | 20 | -9 | 25.1 | ..... | 25, 26 | 48 | 16 | 2 | 31.0 | ..... |
| Wyanet..... | 26 | 56 | 20 | -8 | 26.3 | 0.70 | 25 | 57 | 15, 16 | 5 | 31.1 | 6.25 |
| Tiskilwa..... | 26 | 54 | 20 | -6 | 27.5 | ..... | 25 | 54 | 15 | 8 | 33.2 | ..... |
| Hennepin (S.)... | 26 | 58 | 20 | -5 | 24.0 | ..... | 25 | 60 | 15 | 6 | 32.0 | ..... |
| Do....(O.).... | 26 | 56 | 20 | -7 | 23.4 | ..... | 25 | 58 | 15 | 8 | 32.3 | ..... |
| Peoria..... | 26 | 63 | 20 | -7 | 30.2 | 0.33 | 25 | 60 | 15 | 11 | 35.5 | 4.37 |

Table showing the range of the thermometer, &c., for February and March—Continued.

| States and stations. | FEBRUARY, 1870. | | | | | | MARCH, 1870. | | | | | |
|----------------------|-----------------|------------|--------|------------|------------|-----------------------|--------------|------------|------------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| ILLINOIS—Cont'd. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Springfield..... | 26 | 56 | 20 | — 4 | 29.1 | ..... | 10 | 63 | 15 | 6 | 36.2 | ..... |
| Dubois..... | 14 | 68 | 20 | 0 | 34.2 | 1.46 | 25 | 65 | 17 | 13 | 39.9 | 2.15 |
| South Pass..... | 14 | 68 | 20 | 0 | 36.1 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Galesburg..... | 26 | 63 | 20 | — 8 | 28.0 | 0.30 | 28 | 62 | 15 | 2 | 33.2 | 2.80 |
| Manchester..... | 26 | 67 | 20 | — 9 | 31.5 | 0.35 | 25 | 63 | 15 | 5 | 37.2 | 4.61 |
| Mount Sterling.. | 26 | 69 | 20 | —10 | 29.7 | 0.50 | 10 | 62 | 15 | 5 | 37.9 | 7.20 |
| Andalusia..... | 26 | 64 | 20 | — 4 | 28.0 | ..... | 24, 25 | 58 | 15 | 8 | 33.5 | ..... |
| Angusta..... | 26 | 67 | 20 | — 9 | 30.8 | 0.12 | 11 | 64 | 15 | 0 | 35.3 | 5.82 |
| Warsaw..... | 26 | 72 | 20 | — 9 | 32.3 | 0.05 | 10 | 66 | 15 | 2 | 35.5 | 4.45 |
| Averages..... | ..... | ..... | ..... | ..... | 28.6 | 1.11 | ..... | ..... | ..... | ..... | 30.3 | 3.82 |
| WISCONSIN. | | | | | | | | | | | | |
| Sturgeon Bay.... | 11 | 40 | 21 | —15 | 18.2 | 2.18 | 25, 28 | 44 | 8 | — 6 | 26.5 | 2.60 |
| Manitowoc..... | 11 | 46 | 20 | —16 | 23.1 | 1.65 | 24 | 45 | 16 | 4 | 29.3 | 3.58 |
| Plymouth..... | 11 | 43 | 20 | —17 | 21.0 | 1.40 | 6 | 34 | 3 | 6 | ..... | ..... |
| Hingham..... | 11 | 45 | 20 | —14 | 23.2 | ..... | 30 | 49 | 16 | — 1 | 23.6 | ..... |
| Milwaukee..... | 11 | 45 | 20 | —11 | 24.0 | 1.32 | 19 | 47 | 16 | — 2 | 29.9 | 5.01 |
| Appleton..... | 11 | 47 | 20 | —14 | 20.7 | 0.64 | 28 | 50 | 16 | 4 | 31.7 | ..... |
| Geneva..... | 11 | 45 | 20 | —10 | 23.7 | 0.40 | 25 | 50 | 16 | — 3 | 29.3 | 3.35 |
| Waupaca..... | 11 | 48 | 25 | —18 | 21.8 | ..... | 18, 29 | 52 | 12 | 7 | 30.7 | ..... |
| Embarrass..... | 11 | 44 | 21 | —22 | 17.1 | 1.35 | 18 | 47 | 16 | 5 | 27.8 | ..... |
| Rocky Run..... | 7 | 48 | 20, 21 | —14 | 22.2 | 1.99 | 19, 28 | 44 | 16 | — 4 | 29.0 | 6.38 |
| Madison..... | 11 | 44 | 20 | —15 | 20.9 | 1.35 | 25 | 42 | 16 | — 8 | 27.0 | 3.85 |
| Edgerton..... | 11 | 48 | 20 | —10 | 25.5 | 2.78 | 25 | 48 | 16 | — 4 | 31.1 | 2.22 |
| Mosinee..... | 11 | 43 | 20 | —29 | 16.1 | 0.82 | 18, 28 | 46 | 8 | — 2 | 25.7 | 3.76 |
| Baraboo..... | 26 | 52 | 20 | —16 | 22.5 | 3.25 | 26, 28, 31 | 50 | 16 | —10 | 29.4 | 11.00 |
| New Lisbon..... | 10 | 54 | 20 | —24 | 22.5 | ..... | 24, 25 | 53 | 16 | —10 | 30.2 | ..... |
| Bayfield..... | 11 | 42 | 21 | —28 | 13.3 | ..... | 24 | 50 | 12 | —12 | 24.1 | ..... |
| Averages..... | ..... | ..... | ..... | ..... | 21.0 | 1.59 | ..... | ..... | ..... | ..... | 28.3 | 4.64 |
| MINNESOTA. | | | | | | | | | | | | |
| Beaver Bay..... | 12 | 43 | 21 | —26 | 15.5 | 2.74 | ..... | ..... | ..... | ..... | ..... | ..... |
| Afton..... | 26 | 44 | 20 | —26 | 15.1 | 0.85 | 27 | 47 | 8 | —15 | 26.6 | 3.35 |
| St. Paul..... | 10, 26 | 39 | 20 | —23 | 17.8 | 0.60 | 23, 29, 31 | 46 | 8 | —10 | 27.5 | 2.10 |
| Minneapolis..... | 9, 10 | 36 | 20 | —29 | 14.9 | 0.56 | 28, 30 | 46 | 8 | —16 | 25.2 | 2.86 |
| Sibley..... | 10 | 39 | 20 | —32 | 14.6 | ..... | 28 | 49 | 8 | —23 | 20.2 | 2.22 |
| Koniska..... | 10 | 40 | 20 | —30 | 14.8 | 0.40 | 30, 31 | 50 | 8 | —26 | 23.9 | 1.65 |
| New Ulm..... | 11, 16 | 38 | 19 | —22 | 15.3 | 0.17 | 27, 30 | 45 | 8 | —20 | 22.4 | 1.78 |
| Madelia..... | 10 | 43 | 20 | —34 | 14.0 | 0.10 | 30 | 48 | 8 | —20 | 20.8 | 3.27 |
| White Earth..... | 25 | 42 | 19 | —32 | 10.9 | 1.85 | 28, 30, 31 | 48 | 7 | —16 | 18.2 | 3.38 |
| Averages..... | ..... | ..... | ..... | ..... | 14.8 | 0.91 | ..... | ..... | ..... | ..... | 23.1 | 2.58 |
| IOWA. | | | | | | | | | | | | |
| Clinton..... | 15, 26 | 50 | 20 | —12 | 23.5 | 0.50 | 25 | 50 | 15 | 5 | 30.4 | 4.25 |
| Waukon..... | 11, 26 | 40 | 20 | —16 | 20.1 | 0.50 | 28 | 45 | 16 | — 3 | 26.1 | ..... |
| Dubuque..... | 26 | 51 | 20 | — 7 | 25.3 | 1.36 | 28 | 52 | 16 | 4 | 30.8 | 3.95 |
| Monticello..... | 7 | 61 | 20 | —10 | 25.2 | 0.31 | 28 | 54 | 16 | 3 | 29.3 | 3.00 |
| Bowen's Prairie.. | 25, 26 | 56 | 20 | 12 | 24.9 | 1.50 | 28 | 56 | 15, 16, 17 | — 4 | 29.1 | 4.35 |

Table showing the range of the thermometer, &c., for February and March—Continued.

| States and stations. | FEBRUARY, 1870. | | | | | | MARCH, 1870. | | | | | |
|--------------------------|-----------------|------------|-------|------------|------------|-----------------------|--------------|------------|--------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| IOWA—Cont'd. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Fort Madison | 26 | 65 | 20 | — 9 | 29.7 | 0.15 | 25 | 59 | 15 | 2 | 33.3 | 4.47 |
| Guttenberg | 11 | 46 | 20 | —12 | 21.2 | 0.33 | 28 | 52 | 16 | 0 | 27.2 | ..... |
| Mount Vernon | 26 | 48 | 20 | — 9 | 24.0 | ..... | 28 | 50 | 15, 16 | 6 | 29.7 | ..... |
| Iowa City | 26 | 57 | 20 | —10 | 24.9 | 0.25 | 25 | 56 | 15 | 4 | 30.8 | 3.42 |
| Independence | 26 | 49 | 20 | —14 | 21.9 | 0.50 | 28 | 52 | 8, 16 | — 1 | 27.3 | 3.13 |
| Near Independ'ce | 26 | 46 | 20 | —18 | 21.7 | 0.30 | 25 | 48 | 16 | — 2 | 26.7 | 2.20 |
| Waterloo | 26 | 50 | 20 | —16 | 22.7 | ..... | 28 | 50 | 16 | 2 | 27.9 | ..... |
| Rockford | 26 | 47 | 20 | —16 | 21.9 | ..... | 19, 31 | 44 | 8 | — 5 | 27.2 | ..... |
| Iowa Falls | 25, 26 | 48 | 20 | —17 | ..... | 0.00 | 24 | 48 | 8 | — 6 | 27.0 | 5.55 |
| Ames | | | | | | | 24, 28 | 50 | 8 | —12 | 23.6 | 3.70 |
| Algona | 16 | 45 | 20 | —18 | 20.0 | 0.00 | 23 | 60 | 8 | — 9 | 23.2 | ..... |
| West Bend | 10 | 42 | 20 | —25 | 17.1 | 0.00 | 25 | 45 | 8 | —19 | 21.2 | 3.70 |
| Webster City | 16 | 50 | 20 | —17 | 24.6 | ..... | 18 | 46 | 8 | —10 | 26.2 | ..... |
| Boonesboro | 25 | 50 | 20 | —18 | 24.6 | 0.00 | 24 | 48 | 8 | —12 | 24.9 | 3.91 |
| Mineral Ridge | 10, 25 | 51 | 20 | —13 | 26.4 | ..... | 18 | 50 | 8 | — 8 | 28.0 | ..... |
| Fontanelle | 25 | 57 | 20 | —14 | 28.0 | 0.00 | 10 | 53 | 8 | — 5 | 29.2 | 3.20 |
| Grant City | | | | | | | 27 | 50 | 8 | — 7 | 26.0 | 4.30 |
| Logan | 25 | 60 | 20 | —15 | 29.6 | 0.00 | 26 | 60 | 15 | — 7 | 25.7 | ..... |
| Woodbine | 25 | 59 | 19 | —14 | 28.0 | 0.01 | 25 | 60 | 8 | — 7 | 26.7 | 1.30 |
| West Union | 24 | 52 | 20 | —17 | 23.4 | 0.78 | 28 | 62 | 16 | — 1 | 28.6 | 3.73 |
| Averages | | | | | 24.0 | 0.36 | | | | | 27.4 | 3.64 |
| MISSOURI. | | | | | | | | | | | | |
| St. Louis | 26 | 64 | 20 | 2 | 36.7 | 0.33 | 10 | 63 | 15 | 15 | 40.0 | 2.76 |
| Allenton | 25 | 69 | 20 | — 1 | 35.5 | 0.59 | 10 | 70 | 15 | 7 | 40.2 | 4.95 |
| Hematite | 14 | 75 | 20 | 1 | 38.2 | 0.20 | 10 | 67 | 15 | 9 | 42.1 | 4.05 |
| Rolla | 14, 25 | 69 | 20 | 2 | 36.1 | 1.06 | 10 | 65 | 15 | 10 | 40.7 | 4.64 |
| Jefferson City | 10 | 64 | 20 | 0 | 34.0 | ..... | 11 | 68 | 15 | 6 | 35.0 | ..... |
| Kansas City | 10 | 71 | 20 | — 1 | 38.2 | 0.00 | 11 | 72 | 15 | 4 | 41.0 | 0.63 |
| Harrisonville | 25 | 68 | 20 | 4 | 36.9 | 0.00 | 11, 25, 27 | 66 | 15 | 2 | 38.4 | 0.97 |
| St. Joseph | 10 | 65 | 20 | 3 | 39.5 | ..... | 11 | 66 | 15 | 3 | 37.5 | 1.45 |
| Oregon | 10 | 69 | 20 | — 9 | 34.2 | 0.03 | 10 | 65 | 15 | — 5 | 34.2 | 2.30 |
| Averages | | | | | 36.6 | 0.32 | | | | | 38.8 | 2.72 |
| KANSAS. | | | | | | | | | | | | |
| Athlison | 10 | 68 | 20 | — 6 | 33.9 | 0.00 | 11 | 67 | 15 | — 1 | 36.0 | 2.15 |
| Leavenworth | 10 | 69 | 20 | — 6 | 32.8 | 0.00 |  |  |  |  |  | ..... |
| Olathe | 9 | 70 | 19 | — 5 | 34.5 | 0.00 |  |  |  |  |  | ..... |
| Paola | 10 | 68 | 20 | — 2 | 36.2 | 0.00 | 11 | 73 | 15 | 2 | 38.2 | 0.80 |
| Baxter Springs | 10 | 74 | 20 | — 2 | 41.2 | 0.60 | 28 | 79 | 15 | 7 | 43.7 | 2.60 |
| Lawrence | 10 | 68 | 20 | — 2 | 35.4 | 0.03 | 11, 27 | 67 | 15 | 3 | 37.7 | 1.86 |
| Holton | 10 | 66 | 20 | — 5 | 34.4 | ..... | 19 | 68 | 15 | — 2 | 32.1 | ..... |
| Neosho Falls | 9 | 69 | 20 | — 2 | 35.2 | 0.00 | 11 | 74 | 15 | 2 | 31.4 | 1.00 |
| Le Roy | 24 | 69 | 19 | 0 | 40.3 | ..... | 28 | 76 | 15 | 3 | 39.6 | 1.87 |
| State Ag'l College | 13 | 69 | 20 | — 3 | 34.1 | 0.00 | 21, 27 | 68 | 15 | ..... | 36.2 | 1.45 |
| Council Grove | 10 | 73 | 20 | 0 | 38.3 | 0.00 | 28 | 72 | 15 | — 6 | 40.3 | 1.65 |
| Crawfordsville | 10 | 75 | 20 | — 2 | 40.8 | 0.02 | 11, 25 | 74 | 15 | 5 | 44.2 | 1.50 |
| Averages | | | | | 36.4 | 0.07 | | | | | 37.9 | 1.65 |

Table showing the range of the thermometer, &c., for February and March—Continued.

| States and stations. | FEBRUARY, 1870. | | | | | | MARCH, 1870. | | | | | |
|----------------------|-----------------|------------|------------|------------|------------|-----------------------|--------------|------------|----------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| NEBRASKA. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Omaha Agency .. | 25 | 67 | 19 | -14 | 32.6 | 0.00 | 27 | 62 | 15 | -3 | 27.8 | 1.95 |
| Blair | 25 | 60 | 19, 20 | -10 | 29.4 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| De Soto | 25 | 57 | 20 | -15 | 28.7 | 0.03 | 25, 27 | 55 | 15 | -6 | 27.7 | 1.36 |
| Bellevue | 25 | 62 | 20 | -5 | 32.5 | 0.00 | 10 | 64 | 15 | 0 | 32.5 | 1.00 |
| Nebraska City... | 25 | 64 | 20 | -5 | 31.3 | 0.00 | 10 | 66 | 15 | 0 | 32.4 | 2.15 |
| Averages ..... | ..... | ..... | ..... | ..... | 30.9 | 0.01 | ..... | ..... | ..... | ..... | 30.1 | 1.62 |
| UTAH TERRITORY. | | | | | | | | | | | | |
| G't Salt Lake City | 24 | 58 | 18 | 20 | 39.1 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Coalville | 9 | 52 | 17 | -13 | 28.2 | ..... | 26 | 60 | 15 | -18 | 32.8 | 1.60 |
| CALIFORNIA. | | | | | | | | | | | | |
| Monterey | 1 | 70 | 17 | 34 | 52.7 | 3.80 | 29 | 67 | | 35 | 50.3 | 1.91 |
| Chico | 4 | 70 | 17 | 32 | 51.3 | 3.70 | 31 | 72 | 5, 6, 14 | 32 | 51.8 | 3.44 |
| Watsonville | 9 | 79 | 16 | 33 | 54.2 | 3.59 | 28 | 76 | 5 | 35 | 52.2 | 2.01 |
| Vacaville | 3 | 69 | 25 | 34 | 51.7 | 3.24 | 25, 26, 28 | 66 | 14 | 34 | 51.3 | 1.62 |
| Cabto | 3 | 66 | 17 | 32 | 49.1 | 9.40 | 28, 29 | 66 | 14 | 34 | 48.0 | 10.00 |
| Visalia | 8 | 78 | 5 | 29 | 51.8 | 2.76 | 29 | 79 | 5 | 30 | 51.2 | 0.55 |
| Averages ..... | ..... | ..... | ..... | ..... | 51.8 | 4.42 | ..... | ..... | ..... | ..... | 50.8 | 3.26 |
| MONTANA TERR'Y. | | | | | | | | | | | | |
| Deer Lodge City . | 21 | 55 | 17 | -15 | 29.4 | 1.05 | 30 | 62 | 14 | -28 | 26.5 | 1.11 |
| Missoula Mills .. | ..... | ..... | ..... | ..... | ..... | ..... | 31 | 70 | 15 | -6 | 39.5 | ..... |
| WASHINGTON TER. | | | | | | | | | | | | |
| Walla-Walla | 22, 23 | 50 | 11, 15 | 38 | 45.7 | 8.70 | ..... | ..... | ..... | ..... | ..... | ..... |
| COLORADO TERR'Y. | | | | | | | | | | | | |
| Denver | 24 | 64 | 5 | 1 | 33.5 | 1.70 | 27 | 67 | 14 | -8 | 32.7 | 0.70 |
| OREGON. | | | | | | | | | | | | |
| Portland | 22 | 58 | 16, 27, 28 | 32 | 42.5 | 4.30 | ..... | ..... | ..... | ..... | ..... | ..... |
| Eola | 22 | 54 | 16 | 27 | 39.2 | 5.63 | ..... | ..... | ..... | ..... | ..... | ..... |

STATE AVERAGES FOR FEBRUARY AND MARCH, 1870.

Table showing the highest and lowest temperature (with dates prefixed) in the States named, with the average mean temperature and rain-fall (including melted snow) of the same States, for the months of February and March, 1870.

| State. | FEBRUARY, 1870. | | | | | | MARCH, 1870. | | | | | |
|----------------------|-----------------|---------------------------|--------|--------------------------|------------------------------|-------------------|--------------|---------------------------|--------|--------------------------|------------------------------|-------------------|
| | Date. | Highest temper- ature. | Date. | Lowest temper- ature. | Average mean temperature. | Average moisture. | Date. | Highest temper- ature. | Date. | Lowest temper- ature. | Average mean temperature. | Average moisture. |
| Maine | 20 | 56 | 4 | —0 | 19.9 | 5.84 | 20, 31 | 56 | 12 | —12 | 28.4 | 3.98 |
| New Hampshire .. | 15 | 52 | 5 | —20 | 16.9 | 4.95 | 20 | 60 | 12 | —12 | 26.9 | 3.31 |
| Vermont | 15 | 49 | 4 | —29 | 17.4 | 4.75 | 30 | 53 | 12 | —18 | 25.2 | 2.04 |
| Massachusetts | 18 | 55 | 25 | —8 | 24.7 | 5.05 | 22 | 61 | 15 | 2 | 29.9 | 4.39 |
| Connecticut | 18 | 58 | 22 | —3 | 26.9 | 6.32 | 21 | 56 | 11 | 9 | 31.7 | 5.55 |
| New York | 18 | 60 | 4 | —20 | 24.4 | 4.19 | 30 | 63 | 11, 19 | —9 | 29.1 | 4.14 |
| New Jersey | 18 | 60 | 22 | 0 | 32.3 | 3.43 | 20 | 63 | 17 | 16 | 35.9 | 3.91 |
| Pennsylvania | 13, 17, 18 | 60 | 21, 23 | —10 | 20.7 | 3.87 | 30 | 67 | 17 | —8 | 33.6 | 3.84 |
| Maryland | 18 | 60 | 21 | 5 | 34.6 | 3.49 | 21 | 65 | 16 | 16 | 40.4 | 2.88 |
| Virginia | 18 | 73 | 22 | —1 | 37.3 | 3.36 | 21 | 71 | 17 | 10 | 40.9 | 3.59 |
| North Carolina | 27 | 76 | 21 | 4 | 41.7 | 3.63 | 22 | 76 | 17 | 10 | 45.2 | 4.62 |
| South Carolina | 27 | 76 | 21 | 15 | 47.6 | 4.10 | 29 | 78 | 9 | 23 | 51.5 | 7.26 |
| Georgia | 27 | 74 | 21 | 10 | 44.9 | 4.60 | 29 | 76 | 9 | 25 | 51.9 | 6.60 |
| Alabama | 14 | 72 | 21 | 15 | 49.6 | 4.86 | 29 | 77 | 9 | 24 | 54.0 | 6.96 |
| Florida | 27 | 80 | 21 | 28 | 56.5 | 3.25 | 2, 29 | 86 | 18 | 28 | 62.6 | 5.39 |
| Texas | 23 | 88 | 20 | 20 | 56.4 | 0.64 | 5 | 89 | 15 | 21 | 60.0 | 2.1 |
| Mississippi | 12 | 76 | 21 | 18 | 49.2 | 2.51 | 28 | 77 | 9 | 27 | 53.8 | 5.93 |
| Tennessee | 14 | 71 | 21 | 5 | 41.8 | 3.71 | 28, 29 | 71 | 17 | 11 | 44.6 | 4.27 |
| Kentucky | 11, 12 | 64 | 21 | —2 | 36.3 | 3.60 | 25 | 68 | 17 | 10 | 41.1 | 4.53 |
| Ohio | 14 | 62 | 21 | —7 | 29.9 | 2.39 | 25 | 69 | 16 | 4 | 34.8 | 4.14 |
| Michigan | 16, 18 | 54 | 20, 21 | —24 | 22.8 | 2.13 | 28, 30, 31 | 58 | 12 | —14 | 29.6 | 3.04 |
| Indiana | 11, 14, 26 | 62 | 21 | —12 | 30.6 | 1.68 | 25, 30 | 66 | 15, 16 | 4 | 37.1 | 3.04 |
| Illinois | 26 | 72 | 20 | —13 | 28.6 | 1.11 | 31 | 79 | 16 | —3 | 30.3 | 3.82 |
| Wisconsin | 10 | 54 | 20 | —29 | 21.0 | 1.59 | 24, 25 | 53 | 12 | —12 | 28.3 | 4.64 |
| Minnesota | 26 | 44 | 20 | —34 | 14.8 | 0.91 | 30, 31 | 50 | 8 | —26 | 23.1 | 2.58 |
| Iowa | 26 | 65 | 20 | —25 | 24.0 | 0.36 | 28 | 62 | 8 | —19 | 27.4 | 3.64 |
| Missouri | 14 | 75 | 20 | —9 | 36.6 | 0.32 | 11 | 72 | 15 | —5 | 38.8 | 2.72 |
| Kansas | 10 | 75 | 20 | —6 | 36.4 | 0.07 | 28 | 79 | 15 | —6 | 37.9 | 1.65 |
| Nebraska | 25 | 67 | 20 | —15 | 30.9 | 0.01 | 10 | 66 | 15 | —6 | 30.1 | 1.62 |
| California | 9 | 79 | 5 | 29 | 51.8 | 4.42 | 29 | 79 | 5 | 30 | 50.8 | 3.26 |
| Dist. of Columbia.. | 18 | 52 | 21 | 13 | 38.9 | 3.03 | 21 | 57 | 9, 17 | 26 | 40.3 | 3.70 |

NOTES OF THE WEATHER FOR FEBRUARY, 1870.

Steuben, Me.—Aurora 1st; greatest freshet in many years 20th.

Orono, Me.—Auroras, 1st brilliant, 10th, 11th.

W. Waterville, Me.—Auroras 1st, 21st, 26th; snow, rain, 18th, 19th, and damaging flood 20th. Stormy month; 1.94° colder than the February average of 6 years.

Gardiner, Me.—Auroras, 1st and 23d, brilliant 25th. Average heat of February for 34 years, 20.59° ; and average moisture 3.35 inches.

Lisbon, Me.—Storm 18th, 19th; aurora 23d; excellent sleighing since 21st.

Norway, Me.—Brilliant aurora 1st; storm 18th, 19th; freshet 20th. Stormy month; 4.48° colder than last year.

Cornish, Me.—Aurora 1st; hail, sleet, rain, 18th; mist, snow, 19th.

Cornishville, Me.—Month's average heat for 40 years, 18.33° .

Stratford, N. H.—Snow fall this February 42.5 inches.

Whitefield, N. H.—Aurora 1st. Snow or rain on 20 days; 2 to 3 feet snow on the ground.

Antrim, N. H.—Coldest month this winter. Snow on 9 days; and on 35 days since October 1st.

Tamworth, N. H.—Auroras 1st, 23d, 27th; no frost in ground 1st; ground frozen 4 inches 7th. The cold penetrated 20 inches of snow and 4 of earth on 4th and 5th. Blustery, drifting 21st, 22d. Snow 29 inches in fields, 35 in woods. Month steadily cold.

Goffstown Center, N. H.—Auroras 1st, 4th. Month rather pleasant.

Lunenburg, Vt.—Snow and ashes, (or fine sand,) mixed, three inches, 12th. Stormy month; 4 feet snow on ground.

N. Craftsbury, Vt.—Brilliant auroras 1st, 5th; great rain and floods 19th. Coldest February in 3 years, and very changeful.

Newport, Vt.—Aurora 1st; rain 18th; then snow 19th.

E. Bethel, Vt.—Snow night of the 17th; rain 18th and on 19th with high wind; freshets 19th, 20th. Mean heat of winter 22.5° .

Woodstock, Vt.—Lightning 19th; Ottaqueche River open (4th time) 19th; good sleighing all month; snow 2 feet deep.

W. Charlotte, Vt.—Auroral arch all night 1st; drifting snow, 12 to 18 inches, 9th; ice on lake 2 to 3 inches 14th; heavy rain 18th, 19th.

Panton, Vt.—Bright aurora 1st; Arnold's Bay closed 4th; drifting snow-storm 8th; heavy rains 18th.

N. Billerica, Mass.—Aurora 1st; 12 inches snow 4th; drifting snow storm 8th; heavy storm 18th, 19th. A hard, raw month.

New Bedford, Mass.—Little snow or ice; river not frozen 24 hours.

Worcester, Mass.—Aurora 1st, 2d; furious snow storm 8th; storm 28th.

Mendon, Mass.—Bright aurora 1st; damaging freshet 18th.

Lunenburg, Mass.—Ground has 18 inches snow 1st; good sleighing all month; 9 inches snow on ground 28th. Average of February for 30 years 26.38° ; this month 27.60° .

Amherst, Mass.—A few days good sleighing before 14th; warm rain, snow gone 18th; good sleighing at close.

Richmond, Mass.—Heavy rain, loud thunder, lightning, 18th.

Newport, R. I.—Rain, snow, hail, 21st, and mercury fell 20° from 7 a. m. to 9 p. m. Winter mean temperatures, 1865, 29.78° ; 1866, 31.08° ; 1867, 29.7° ; 1868, 26.78° ; 1869, 29.95° ; 1870, 33.92° .

Middletown, Ct.—Auroras 1st, brilliant 13th; lightning 18th.

Colebrook, Ct.—Heavy rain p. m. of 18th to p. m. of 19th.

Brookfield, Ct.—Rain in torrents, heavy thunder, sharp lightning, 18th.

Moriches, N. Y.—Aurora 1st. A remarkable February and winter; no ice for storing till 23d, then only 3 inches thick.

S. Hartford, N. Y.—Heavy rain and thunder and lightning 18th, with freshets; aurora 23d.

Garrisons, N. Y.—Aurora 1st; heavy northeast snow-storm 8th; severe southeast storm of rain, lightning and thunder, melting snow and causing floods 18th; river open all month; 8 inches frost in ground.

New York City.—(Professor Morris.)—Aurora 1st; snow and gale 8th; lightning 18th; light snow 19th; snow and rain p. m. 27th, then two inches snow till 6 p. m. 28th. (Professor Joy.)—Snow 1st; pleasant till 7th; eight inches of snow 8th; almost a hurricane from northwest 9th; heavy rains 14th, 15th, 17th, 18th, 20th; cold and clear to 27th.

Glasco, N. Y.—Splendid aurora 1st; Hudson River closed 8th; opened 12th; closed 24th; heavy thunder showers 18th.

Minaville, N. Y.—Sheet lightning 18th; good sleighing all month; 34.75 inches drifted snow. Winter mild.

Cooperstown, N. Y.—Ice on Otsego Lake, four inches 1st; twelve inches 28th; best sleighing this winter 28th; month 4° below last February.

North Hammond, N. Y.—Aurora 1st; snow all day 2d, 22d, 23d; heavy rain and snow 18th. Sudden and great changes.

Leyden, N. Y.—Mean temperature—for February, 1869, 25.16° ; 1870, 16.40° —rainfall for February, 1869, 0.25 inches; 1870, 1.05 inches—snow for February, 1869, forty-one inches; 1870, thirty inches.

Utica, N. Y.—Magnificent aurora, with green and dark orange beams, 1st; twelve inches snow 8th; snow, rain, 18th; Mohawk overflows 19th; severe snow storm all night 20th, and day 21st; snow all day and night 26th.

South Trenton, N. Y.—Pleasant January and up to 20th, when three days' drifting snow blocked roads. Three inches snow on ground 28th.

Cazenovia, N. Y.—Aurora 1st; snow in month 52.25 inches.

Depauville, N. Y.—Auroras 1st, 26th; good sleighing last week 28th.

North Volney, N. Y.—Aurora 1st; snow all day 2d, 3d; severe, blustering snow storm 20th, 21st, 22d. Month 3.15° colder than in 1869.

Waterbury, N. Y.—Aurora 1st; two spots on sun visible to naked eye, one one-eighth of sun's diameter; four large and several smaller nuclei, visible by telescope, 13th.

Nichols, N. Y.—Rain and three inches snow 18th; blustering snow storm 20th; squalls 21st, 24th; snow, hail, rain, 27th.

Little Genesee, N. Y.—No bad storms this month; some potatoes and turnips yet undug.

Suspension Bridge, N. Y.—Sleighing all month except 17th and 28th.

Buffalo, N. Y.—Mean temperature 2.25° below the average of twelve Februarys; sleighing twenty-four days; coldest seven consecutive mornings this winter, 19th to 25th, both inclusive.

Newark, N. J.—Coldest winter month, and 21st, 22d, 23d the coldest consecutive mornings, making some storing ice; the temperature exceeded in half of twenty-six Februarys; average of the 26, 30.61; coldest, 1868, 21.86° ; warmest, 1857, 35.97° .

New Brunswick, N. J.—Blue bird 14th; copious rains, heavy thunder, lightning, 18th; crows 20th. The cold snap froze lilac sprouts.

Moorestown, N. J.—Snow, rain, snow, high wind, 8th; heavy rains, thunder, lightning, 17th, 18th. Winter, mean temperature 34.93° ; rain 10.63 inches; snow 15.5 inches. Ground fit for plow much of the time.

New Germantown, N. J.—Aurora 1st; ice four inches thick 25th.

Newfield, N. J.—Diffuse aurora 1st; blue bird 15th; prospecting robins 26th; black birds migrating north 28th.

Greenwich, N. J.—Aurora 1st; high winds 2d to 6th; larks, crocuses, 17th; thunder gust 18th; ice two inches thick 22d.

Vineland, N. J.—Severe snow storm 8th; rain storm all day 18th; cold, windy, 19th. No injury yet to fruit.

Nyces, Pa.—Rolling thunder, rain, sleet 18th.

Hamlington, Pa.—Dim aurora 1st. Month warm like March; little sleighing, much thawing and freezing.

Dyberry, Pa.—Aurora 1st; fifteen inches snow 8th; storm of fine hail 18th; four inches snow and hail 27th.

Fallsington, Pa.—Aurora 1st; snow, frozen rain, 8th; thunder shower 18th. Mild month, bad roads.

Germantown, Pa.—Faint white aurora 1st; pyrus japonica and althea in leaf 25th.

Horsham, Pa.—Heavy fall of snow 8th. The last week cold; considerable ice gathered.

Plymouth Meeting, Pa.—Aurora 1st; thunder shower, vivid lightning, 18th; thermometer fell 27° in six hours. Sleighing 8th to 12th. Winter snow-fall 21.86 inches.

White Hall, Pa.—Aurora 1st; eight inches drifted snow 8th; seven inches snow 27th. Month's snow-fall eighteen inches.

Factoryville, Pa.—Aurora 1st; severe snow storm 8th. Mean temperature of this winter 30.01° .

Reading, Pa.—Aurora 1st; snow 8th; rain, high wind, 18th; ice on canal 3.5 inches thick 25th; hail, snow, rain, 27th.

West Chester, Pa.—Bright aurora 1st; heavy thunder storm 18th.

Parkersville, Pa.—Slight aurora 1st; eight inches snow 8th; showers all day 18th; air smoky 4th, 7th 12th, 27th.

Ephrata, Pa.—Aurora 1st; snow 8th; heavy rain last night and to-day, hail and snow to-night, 18th; high wind all 19th.

Ashland, Pa.—Aurora 1st; snow 8th; wind changed from south to northeast at 4 p. m. 18th, mercury fell fast from 50° to 32° , hail at night.

Harrisburg, Pa.—Heavy snow storm 8th; drifting snow 20th; ice four inches thick 21st; sleet, rain, hail, snow, 27th.

Carlise, Pa.—Bright day, dry roads, plowing 7th; eighteen inches snow 8th, 9th, and six days' sleighing; four inches ice 28th.

Fountain Dale, Pa.—Jays 11th; robins 15th; ice four to six inches thick 23d. Month 4° colder than in 1869.

Tioga, Pa.—Rain, snow, river open 18th; closed 22d.

Williamsport, Pa.—Slight aurora 1st; blue jay 5th; 27 inches snow 8th; sparrows, crows, 10th.

Lewistown, Pa.—Aurora 1st; 29 inches snow in 30 hours 8th, 9th.

Grampian Hills, Pa.—Fair 1st to 7th; moderate to 18th; cold to 25th; month ends moderate, with good wheeling. Snow, month, 15 inches; winter, 62 inches.

Johnstown, Pa.—Snows, sprinkling all day 1st, falling all night 7th, all day 8th, in squalls 9th, 10th.

Franklin, Pa.—Moderate snow 8th, rain 17th, snow 18th. Winter temperature, 29.17° ; last year, 28.09° .

Pittsburg, Pa.—Moderate 1st to 9th; gentle rain 17th, then deepest snow of season 18th, with high wind. Ice in river 5 inches thick last week of month.

Connellsville, Pa.—Crows going south 15th, wild geese north 16th; robins 18th.

New Castle, Pa.—Mild to 17th; cold, sharp northwest winds to 26th.

Beaver, Pa.—Month mild, streams not frozen over.

Milford, Del.—Ice 18th, 20th, 21st; faint aurora 24th.

Woodlawn, Md.—Aurora 1st; robins 14th; thunder and lightning 18th. Snow in sight all month; month 4° colder than in 1869.

Frederick, Md.—Nine inches snow 8th; hail, sleet, snow, rain 18th.

Emmitsburg, Md.—Snow, 9 to 12 inches, 8th; high wind all day, sleet and snow at 4 p. m., 18th; aurora 28th.

Johnsontown, Va.—Rain, high wind 1st; frogs, violets 17th; snow 23d; heavy thunder-storms, hail 27th.

Hampton, Va.—Violent gale, aurora 1st; hyacinths 10th; early vegetation frozen 21st, 22d; thunder-storm 27th.

Zuni Station, Va.—Faint aurora 1st; thunder-storms 15th, 27th; wheat looking badly; peaches and pears frozen.

Bacon's Castle, Va.—Aurora 1st; rain, snow 7th, 8th, 18th; ground frozen 9th; thunder showers 15th, 27th; plowing again 25th.

Comorn, Va.—Aurora 1st; elm and filbert blossoms 5th; periwinkle 17th; plowing nearly all month.

Vienna, Va.—Aurora 2d; snow, 3.1 inches 8th, 2 inches 28th.

Piedmont, Va.—Bluebirds 3d; wild geese 8th; fog, rain, northwest wind-storm, hail, snow 18th, mercury fell 22° in 5 hours; ground froze 24th; robins 27th.

Lyndeburg, Va.—Snow 7th, 8th; robins 13th; rainy 18th; 2.25 inches ice 22d; frogs 26th.

Wytheville, Va.—Wheat fine; some maple sugar made.

Oxford, N. C.—Sleet 5th; rain, snow 6th; peach blossoms 17th; cedar birds, robins 25th; thunder-shower 27th.

Chapel Hill, N. C.—Two terrific thunder and hail storms 27th.

Statesville, N. C.—Rain and sleet 4th, with snow 6th; snow, freeze 20th; thunder-shower and hail 27th.

Aiken, S. C.—Honey peach and wild plum blossoms 12th.

Gowdeysville, S. C.—Ice 1st, 2d; rain, snow, 7th, 20th; thunder-showers, with light hail, 15th; bluelets (or innocents) 16th; peach and plum blossoms 27th.

Holland's Store, S. C.—Doves mating 6th; snow, rain, snow 7th; peach blossoms 19th; furious snow-storm, greatest fall in many years, 22d.

Bluffton, S. C.—Black frost, orange and other fruits hurt, 19th, 21st.

Berne, Ga.—Peas, squashes, &c., nipped 21st.

Penfield, Ga.—Peach blossoms 12th, (very early;) 1.5 inch ice 21st.

Atlanta, Ga.—Thunder-storm (1.7 inches rain in 20 minutes) 15th; some peaches and plums frozen 21st.

Rockville, Ala.—Plum blossoms 3d; peach blossom 16th, many killed 21st.

Green Springs, Ala.—Thunder and lightning 15th, 22d, 26th; sleet 18th.

Coatopa, Ala.—Peach and plum blossoms 12th; thunder-showers 15th, 22d, 26th; rain, hail, snow 17th.

Port Orange, Fla.—Ice on mainland 8th, 20th, 21st; here 20th injured orange trees; green corn 18 miles from here 21st.

Jacksonville, Fla.—Thunder-shower 23d. Fruit not injured by frost. Month 2.20° colder than usual.

Pilatka, Fla.—Thunder showers 15th, 17th; very cold 19th to 22d, ice, frozen ground, but no damage done.

Bremond, Texas.—Frost 14th; ice 20th; peach blossoms 28th.

Gilmer, Texas.—Snows 2d, 3d, 5th; bluetts 7th; buckeye leaves 8th; plum blossoms 14th, and peach 17th; ice 21st.

Houston, Texas.—Ice 18th, 20th; auroras 21st, 25th, 26th, 27th, 28th
Blue Branch, Texas.—Peach and plum blossom 17th; norther, ice 18th; frost 27th. Month dry, windy; corn planting begun.

Austin, Texas.—Frost 9th; wild plum blossoms 12th, and peach 14th.
Lockhart, Texas.—Norther 2d, 7th, 17th, 19th; birds sing, plum and peach blossom 14th. No appreciable rain except on 5th.

New Orleans, La.—Pleasant 8th; peach and plum blossoms 10th; thunder-showers 17th; ice formed 18th to 20th; strawberries in market 22d.

Columbus, Miss.—Peach blossoms 12th; thunder-storms 14th, 15th; ice 1.5 inches thick 21st; heavy thunder-storms 22d, 26th.

Marion, Miss.—Pewee 2d; daffodils 3d; violets 15th; sleet, ground froze 18th, 19th, 20th; thunder and lightning 22d, 26th.

Philadelphia, Miss.—Thunder-storm, high wind 15th; hail 17th.

Brookhaven, Miss.—Frost 1st; ice 2d; thunder and lightning 3d; peach and plum blossoms 6th; corn planting 15th; at 4 p. m., 17th, wind changed to northwest, and mercury fell 35° in one hour, with rain and sleet; wind all night, ground frozen 18th; ice 19th, 21st; pleasant, birds nesting 27th.

Natchez, Miss.—Thunder, rain all day 3d; frost 8th; ice 18th; cold 20th, 21st; thunder-showers 22d; martins 27th.

Elizabethton, Tenn.—Willows leaved 17th; frosts about 20th.

Clarksville, Tenn.—Rain, then snow 7th, till a. m. 8th; rain, sleet, snow, high wind 17th.

Trenton, Tenn.—Very large flaked snow, rain 17th; two inches ice, and ground frozen five inches, 21st.

Memphis, Tenn.—Rain, snow all day 7th; thunder peals, lightning, hail, torrents of rain 14th; rain, gale, snow 17th; cold high wind 20th; heavy rain all day 22d; rain, thunder, lightning, gale 26th, gale 27th.

Pine Grove, Ky.—Snow 7th; rain, thunder, lightning, hail 14th; rain, hail, snow 17th; snows 18th, 19th, 20th. Month's snow 15 inches.

Shelby City, Ky.—Snow 7th, 8th, 14 inches; thunder and lightning 14th; skating 21st; heavy gale 27th. Month 4° colder than its average for ten years.

New Lisbon, Ohio.—Crows, robins 16th; heavy snow-storm 18th. Streams not frozen over this winter.

Salem, Ohio.—Hard month on wheat; late sown much injured.

Cleveland, Ohio.—River frozen over 4th; snow and rain storm 17th.

Williamsport, Ohio.—Heavy thunder-storm 14th; ground frozen 4½ inches 24th.

Hillsboro', Ohio.—Snow 3 to 4 inches 2d; rain, 4 inches snow 17th.

Toledo, Ohio.—A pleasant month. Autumn of 1869 3.34° colder, and this winter 2.78° warmer, than the average of nine years.

Bowling Green, Ohio.—Aurora a. m. 12th; northeast snow-storm night of 5th and all 6th; first February rain 17th.

Urbana, Ohio.—Snow on ground 1st to 7th and 17th to 27th; thunder 14th. Month 7° colder than its average for eighteen years.

Jacksonburg, Ohio.—Aurora 1st; robins 13th; thunder-storm 14th; rain, hail, snow 17th; thunder, southwest, 26th.

Cincinnati, Ohio.—Snow-storm 8 p. m. 17th to 10 a. m. 18th.

Detroit, Mich.—Rain, snow 17th; freezing rain 26th, 27th.

Adrian, Mich.—Violent winds, never nearer than six miles south and forty miles north of this place; the kingfisher remains here all winter.

Alpena, Mich.—Bright aurora 11th; southeast snow-storm 11th; north-east frosty snow 19th, 20th; icy drifting snow from east, 7 inches, 26th, 27th.

Litchfield, Mich.—Good wheeling nearly all the month.

Grand Rapids, Mich.—Sunny, mild month; "cold snap" 20th and 21st, did no damage here.

Northport, Mich.—Snow 1st; skating 4th; ice nearly gone 12th; air full of frost 19th, 20th; coldest day in several years 22d; stormy all 27th.

Copper Falls, Mich.—Very late and severe snow-storms 17th and 18th, 26th and 27th; month's snow fall, 47.5 inches.

Ontonagon, Mich.—Not much ice on lake, but 4 feet snow on land—the greatest depth in many years.

Homestead, Mich.—Faint aurora 11th; severe northeast snow-storm 19th; coldest days since January, 1864, 21st, 22d.

Aurora, Ind.—Thunder-shower 14th, lightning 27th.

Vevay, Ind.—Auroras, 1st faint, 6th brilliant; swallow 4th; plowing 5th; 2.5 inches snow 7th, 8th; birds singing 13th; thunder-showers 14th; rain, 5 inches snow, high wind 17th, 18th; robin 20th; coldest day 21st; crow blackbird 24th.

Spiceland, Ind.—Red aurora, a. m. 1st; heavy thunder, light rain 14th, 17th; snow 19th.

Laconia, Ind.—Snow, 6.5 inches, 8th; thunder and lightning 14th; thunder 17th, 26th. Peaches killed.

Columbia City, Ind.—Robins 25th, crows a few days earlier.

Knightstown, Ind.—Pigeons 4th; thunder-shower 14th; rain, sleet, snow 17th; bluebirds 23d.

Reusselaer, Ind.—Aurora 23d; robins, bluebirds, 26th; severe snow-storm 27th. First half of the month mild, without rain or snow; last half from intense cold to spring-like.

Merom, Ind.—Lightning and thunder 14th, 17th, 26th.

New Harmony, Ind.—Snow, 4.5 inches, 7th; thunder-storm 14th; another, then sleet, then 7 inches snow, 17th.

Near Chicago, Ill.—Sunny days 1st to 4th; snow 17th, 19th; rain 26th; snow and rain 27th, 28th.

Marengo, Ill.—Winter mean temperature 22.84° ; rain-fall 5.47 inches.

Mattoon, Ill.—To 16th pleasant; thunder-storm 16th; snow 17th; 7 inches ice on ponds after 20th.

Aurora, Ill.—Pleasant month; 2 feet frost in ground, and 2 inches snow on ground 28th.

Louisville, Ill.—Blackbirds, wrens, doves, 11th; redbirds, larks, 15th; heavy thunder-storm 17th, and showers 25th.

Golconda, Ill.—Frogs 15th. Backward month, no plowing nor seeding.

Belvidere, Ill.—Bright auroras 1st, 11th; greatest cold since December 12, 1868, 20th; except two days, not severe, and quite dry, till 26th. Month's means—1868, 17.35° ; 1869, 25.32° ; 1870, 22.98° . Winter's means—1868, 16.93° ; 1869, 23.81° ; 1870, 22.66° .

Sapdwich, Ill.—Beautiful vermilion and orange aurora 11th; thunder-shower, warm, 26th.

Ottawa, Ill.—Snow-storm 19th; thunder-storm, high wind, hail, 26th; snow 27th; snow-storm 28th.

Decatur, Ill.—Winter thunder hail-storm 16th; at 2 p. m. mercury at 52° ; in 30 hours at 10° .

Winnebago, Ill.—Brilliant aurora 11th; thunder-showers 26th; rain, snow, 27th; snow 28th.

Tiskilwa, Ill.—Aurora 1st; wild geese to south 16th.

Hennepin, Ill.—Wild geese to north 15th. Month generally mild. Northwest storm 19th; mercury fell from 12° to below 5° by 20th.

Dubois, Ill.—Bluebirds 4th; violent snow-storm 17th; doves cooing 24th. Month 1.5° warmer than average of five years.

South Pass, Ill.—Pigeons to north 9th, and geese 10th; quails call 14th; thunder-showers 14th, 26th; rain, hail, snow, mercury fell 27° in a few hours, 17th; peaches killed 20th; robins 28th.

Manchester, Ill.—Red and white aurora a. m. 1st; thunder, west, 16th, with heavy rain, north, 26th.

Mount Sterling, Ill.—Thunder-storms from southeast 16th, southwest from 26th.

Andalusia, Ill.—Thunder-storm 26th; driving snow all day 27th. Month dry and mild.

Sturgeon Bay, Wis.—Rain, snow, strong wind, 17th; aurora 20th.

Plymouth, Wis.—Aurora 11th; lightning 26th. Average temperature of six years, 21° . A pleasant month, with general good sleighing.

Hingham, Wis.—February snow 5 inches, rain half an inch. Mildest winter in twenty-two years.

Milwaukee, Wis.—Sleighing gone 11th; gale 12th; snow 14th; rain all last night 27th.

Embarrass, Wis.—Auroras 20th, 23d, bright 11th; brilliant meteor in the south 28th.

Geneva, Wis.—Strong northwest wind all night 12th, and at 4 a. m. mercury fell from 36° to 9° .

Mosinee, Wis.—Gale 11th, lightning 26th. Two feet snow in the woods; beautiful logging season.

Baraboo, Wis.—Finest February known here; good sleighing.

St. Paul, Minn.—Mean of month, 17.79° ; of winter, 17.79° —only four Februaries and four winters warmer.

Minneapolis, Minn.—Good sleighing all month; ice in the river 26 inches thick.

Koniska, Minn.—Pleasant month; ice 2 feet thick.

New Ulm, Minn.—Auroras with streamers 1st, 23d.

White Earth, Minn.—Remarkable storm 11th; wind changed from south to east, and round by north to northwest, from 7 a. m. to 2 p. m., driving fine snow with great force. The mercury fell from 24° to 2° . The storm lasted till 8 p. m.

Clinton, Iowa.—Uniform mild month; few cold days.

Waukon, Iowa.—Auroras 11th bright reddish, 24th faint; thunder-storm 26th; snow 27th, 28th.

Guttenburg, Iowa.—Thunder and lightning 27th. Winter mild but unhealthy; ice 15 inches thick.

Independence, Iowa.—A mild month and winter.

Algona, Iowa.—Sharp lightning and heavy thunder 25th.

West Bend, Iowa.—Aurora 1st. Pleasant month; sudden changes.

Boonsboro, Iowa.—Month 2.60° above average of fourteen years.

Mineral Ridge, Iowa.—Aurora 1st; smoky 7th, 13th, 22d to 25th; the warmest winter in 11 years.

Fontanelle, Iowa.—Bright aurora 11th; smoky 20th to 26th; pleasantest February in many years.

Logan, Iowa.—Month bland as April; no storms; dry roads.

Woodbine, Iowa.—Month variable; roads dusty; winter pleasant; few cold days—the coldest, January 17th.

West Union, Iowa.—Sleet, aurora, 1st; first freeze this year, thunder-storm, 24th; snowing all a. m. 28th.

St. Louis, Mo.—Lightning, thunder, rain, 16th; violent rain and hail storm 26th.

Allenton, Mo.—Thunder-storms, lightning, 16th, 26th.

Hematite, Mo.—Wild geese 2d; robins mating 10th, (were here all winter;) goldfinches 16th, buzzards 17th, larks 21st; thunder-storm, high wind, 26th; very dry and much smoky weather—like Indian summer.

Rolla, Mo.—Snow, rain, 7th; bluebirds 8th; thunder, rain, snow, cold, 17th; thunder-shower 26th.

St. Joseph, Mo.—Two snow and one rain sprinkles this month; ground frozen three feet 24th.

Atchison, Kansas.—Warmest February in six years, and dry; Missouri River open all winter.

Leavenworth, Kansas.—Getting cold 18th; mercury fell 58 degrees in 39 hours, and peaches killed by 20th.

Paola, Kansas.—Wild geese 4th; plowing 14th; robin, woodpecker, 16th. One snow flurry this month—no rain.

Baxter Springs, Kansas.—Month very dry; pleasant; but one cold day, when ground froze 4.5 inches; wheat looks well; oats sowed. Month 1.33 degrees warmer than last year.

Lawrence, Kansas.—Bluebirds 1st; robins 11th. Fine dry month; plowing three out of four weeks.

Holton, Kansas.—Bluebirds and pewees 28th. Dryest February known here. Peach crop safe yet.

Kansas City, Kansas.—Ground frozen 7 inches 1st; free by 10th, and river open. No rain or snow worth naming since Christmas.

Neosha Falls, Kansas.—Frogs 8th; prairie chickens cooing 10th. Very warm, pleasant month; ice crop a failure.

Manhattan, Kansas.—Wind changed southwest to northwest 16th, and in three hours mercury fell from 60 to 25 degrees. Plowing after 10th.

Council Grove, Kansas.—Splendid weather; peaches safe—buds swelling.

Crawfordsville, Kansas.—Month pleasant; ten days smoky; much plowing done; fall wheat looks well.

Omaha Agency, Nebraska.—Pleasant month; cold about 20th.

Blair, Nebraska.—Aurora 1st; mocking birds 7th; month clear, dry, warm.

Bellerue, Nebraska.—Month 1.9° and winter 2° warmer than last year.

Nebraska City, Nebraska.—River opened 11th; wild geese 12th; ground frozen twenty inches 18th; blue jays 25th.

Great Salt Lake City, Utah.—Pleasant month; little snow, two rainy days.

Harrisburg, Utah.—Fine farming weather—fields and fruit trees promise an abundant harvest.

Monterey, Cal.—Slight earthquake southeast to northwest, one to two seconds, 17th.

Watsonville, Cal.—Willow blossoms 3d; lilac in leaf 5th; frogs 12th; earthquake, fifteen to twenty-five seconds, 17th; pears blossom 25th. Crops never looked better; late rains have saved the stock in Southern California.

Vacaville, Cal.—Swallows 13th; humming birds 26th.

Visalia, Cal.—Steady rain 12th and 13th, 21st and 22d; frogs 23d.

Deer Lodge City, Mon. Ter.—Warmest February ever known here.

Port Angeles, Wash. Ter.—Northeast winds and clear to 10th; aurora 3d; heavy northwest gale 15th; first ice and snow 16th; rainy and squally 19th to 28th, then clear to close of month.

NOTES OF THE WEATHER FOR MARCH, 1870.

Houlton, Me.—Auroras 4th, 11th, 20th, brilliant 9th and 19th—very brilliant 30th; crows, robins 31st.

Steuben, Me.—Auroras 3d, 20th, 25th, 31st, brilliant 26th; severest snow-storm of the season 17th.

Orono, Me.—Auroras 19th, 20th, 26th, nearly all night 30th.

Williamsburg, Me.—Aurora 20th; wild geese 26th; Snow-fall 19.5 inches.

West Waterville, Me.—Auroras 3d, 21st, 26th, 30th; 14 inches snow with high wind 16th. Month 1.25 degrees colder than March average of six years.

Gardiner, Me.—Auroras 3d, 4th, 24th, 26th, 31st, brilliant 9th, 25th and 30th; fourteen days sleighing ended 15th, and five on 21st. March average heat for 34 years 29.93 degrees.

Lisbon, Me.—One foot snow with severe northeast gale 16th; auroras 25th, 26th, 30th, 31st; frost nearly out of ground 31st.

Norway, Me.—Heavy 36 hours snow-storm 17th, 18th; auroras 19th, 20th, 25th, 26th, 30th; driving snow-storm, rain 28th.

Cornish, Me.—High wind, snow from 2 p. m. 16th to 1 p. m. 18; auroras 20th, 24th, 25th, 30th, 31st.

Cornishville, Me.—Auroras 20th, 25th, 26th, very bright 30th. Average March heat for 40 years, 28.20 degrees. Snow this month 37 inches.

Antrim, N. H.—Snow on 43 days since October 1st; considerable yet on ground; maple sap flowing freely.

Stratford, N. H.—Thirty inches snow in woods; good sleighing; no birds.

Whitefield, N. H.—Great snow-storm 17th; auroras 19th, 25th, 26th, 30th.

Tamworth, N. H.—Cold and rough till 21st; boisterous storms 16th, 17th, 18th; auroras 24th, 25th, 26th, brilliant 19th and 20th; snow in fields 44 inches; in woods 50 inches.

Lunenburg, Vt.—Snow four feet in woods; ice two feet thick.

North Craftsbury, Vt.—Auroras 1st, 3d, 19th, 24th, 25th, 28th, 31st, brilliant 26th and 30th. Pleasant month; less water than in any month in three years.

Newport, Vt.—Auroras 19th, 20th, 24th, 25th, 26th, 30th, 31st; rain, then snow, 22d.

East Bethel, Vt.—Cool and calm 1st to 12th; snow 13th, and gale 16th, 17th; maple sap flowing 29th. Purple linnet the only bird seen.

Woodstock, Vt.—Linnets 29th; very bright aurora 30th. Pleasant month; cloudy, few storms; snow nearly gone.

St. Albans, Vt.—Lake Ontario frozen over in February—first time known. Robins 25th; frogs 29th; wheeling again 31st.

West Charlotte, Vt.—Auroras 1st, 25th, 30th, crimson 11th and 31st; high east wind, some snow and frozen rain 16th; ice flies 27th, (come before the lake opens and leave with the ice); wild geese 31st.

Panton, Vt.—Auroras 3d, 25th, 31st, brilliant 24th and 30th; driving snow-storm 16th, 17th. Lake open; roads muddy.

Castleton, Vt.—Gale, little snow 16th, 17th; bluebird 29th; auroras 30th, 31st.

Kingston, Mass.—Greatest snow-storm of the winter 11th; bluebirds, wild geese 27th; aurora 30th.

Topsfield, Mass.—Sleighing gone; blackbirds, bluebirds, 25th; auroras 30th, 31st.

North Billerica, Mass.—Hard snow-storm 13th; furious storm, 28th; bluebirds, robins 29th. A cold, stormy month till 29th.

New Bedford, Mass.—Roughest month of the season; grass greening; flowers at different times all winter.

Worcester, Mass.—Furious snow-storm 13th; snowy 16; squally 17th, 18th; auroras 22d, 25th; bluebirds 30; robins 31st.

Mendon, Mass.—Bright aurora 1st; fifteen inches snow 10th; bluebirds 21st; robins 22d; pewees 30th; roads muddy 31st.

Lunenburg, Mass.—Brilliant aurora 30th; good sleighing most of month; average March temperature for thirty years, 34.16° ; for 1869, 20.08° ; this month 30.4° .

Amherst, Mass.—Violent wind p. m. and all night 27th.

Richmond, Mass.—Lightning 1st; high northeast wind and snow 13th, 16th.

Williamstown, Mass.—Furious northeast snow-storms 13th, 16th; auroras 19th, 30th, 31st; bluebirds 21st; robin 24th; purple finch 26th; woodcock 31st.

Hinsdale, Mass.—Heavy snows, high winds 13th, 16th, 27th; auroras 19th, 25th; a severe wintry month.

Newport, R. I.—Snow, rain, hail, sleet, with high wind 13th; rain with strong gale 27th.

Columbia, Conn.—Bluebirds, robins, blackbirds 24th.

Colebrook, Conn.—Severe snow-storms 7th, 13th, 16th, 27th.

Moriches, N. Y.—Auroral light 1st, 21st, 25th; gale, some rain 16th; bluebirds 22d; wild geese 28th; robins 30th. Cold March; two severe storms on 13th and 27th, both Sundays.

South Hartford, N. Y.—Auroras 1st, 2d, intense red 19th.

Poughkeepsie, N. Y.—Auroras 22d, 25th, 31st, red 19th, white 21st.

Garrison's, N. Y.—Auroral light 25th; cold, snowy month.

New York City.—Auroras 8th, colored beams 21st, white 25th and 30th; misty rain, snow 12th, 13th; snow, rain 16th, snow 17th.

Cooperstown, N. Y.—Robin 15th, (one seen in January;) gale of 27th not very severe here; a foot of snow in woods on 31st.

Gouverneur, N. Y.—Nearly a foot of snow 13th; bluebirds 14th; robins 31st.

North Hammond, N. Y.—Driving snows all day 13th, 16th 17th, 27th; crows 16th; maple sugar 29th; blackbirds 30th.

Houseville, N. Y.—Snow, twenty-eight inches 13th; hard snow squalls 16th, 17th; auroras 24th, 26th, 31st; snow with gale 27th; robins 31st.

Leyden, N. Y.—Auroras 1st, 25th, 30th, 31st; seventeen inches snow 13th, seven inches 16th; bluebirds 25th; thrush 31st. Snow gone; no freshets.

Utica, N. Y.—Auroras 6th, 23d, 24th, bright 1st, 25th, 30th, 31st; snow all day, strong southeast wind 16th; gale all 27th; robin 30th.

South Trenton, N. Y.—Beautiful aurora 25th; robin 29th; bluebird 30th; wild geese 31st. Snow on fifteen days, (25.5 inches but drifted, poor sleighing,) now fifteen inches in woods; rain on five days.

Cazenovia, N. Y.—March snow fall 61.25 inches on sixteen days.

Depauville, N. Y.—Auroras 1st, 4th, 24th, 25th, 29th, 30th, 31st; severe snow, seventeen inches, 13th, another 16th, 17th, (banks six feet.) Month 3.1° below average of six years, and 1.2° above mean of last March.

Palermo, N. Y.—Severest snow-storms of the winter 12th and 13th, 16th; east gale all 27th; robins 29th; bluebirds 30th; blackbirds 31st.

Nichols, N. Y.—Snows, six inches 7th, six inches 13th, two to three

feet 16th, (deepest known here;) bluebirds, robins 28th; two feet snow in woods 31st.

Newark Valley, N. Y.—Very heavy snow-storm 13th; deepest snow known here 17th; coldest week of the winter 13th to 20th.

Little Genesee, N. Y.—Bluebirds 12th; bees 30th; creeks open 31st.

Suspension Bridge, N. Y.—Sleighbing all month, except 26th, 31st.

Buffalo, N. Y.—Cherry birds 5th; robins 12th; sixteen inches drifted snow from 8 p. m. 15th, to 4 p. m. 17th; bluebirds 24th; month stormy; 2.5° colder than average of twelve years, and 20.5 inches more snow.

Paterson, N. J.—Snows, six inches 7th, 1.5 inches 13th, two inches 16th, three inches 17th.

Newark, N. J.—Wintry month, 1.25° colder than January, and 3° colder than the March average of twenty-six years; warmest March, 48.90°, 1859; coldest 32.54°, 1863. The storms of 16th and 27th were with heavy gales and very high tides.

New Germantown, N. J.—Plowing, sowing oats 26th; snow gone 27th.

Newfield, N. J.—Crows 1st; ground frozen two inches 4th; blackbirds 6th; three inches snow 7th; rain, high wind 13th, 16th, 27th; ground sparrow 16th; flickers, larks 30th.

Greenwich, N. J.—Storing two-inch ice 5th; 3.5 inches snow 7th; heavy rain, with snow 13th, with high winds 16th, 27th; oats sown 29th.

Vineland, N. J.—Rain, snow 13th; high wind, rain 16th, 27th.

Nyces, Pa.—Snow plenty; ground frozen six to eight inches; robins and bluebirds come, look, and leave again.

Hamilton, Pa.—Cold, blustering month; more sledding than in winter.

Dyberry, Pa.—Snow, hail 12th, 13th; ten inches drifting snow 16th; robins 21st; two feet snow in March; eighty inches this season.

Fallsington, Pa.—Severe rain, hail, sleet, snow 12th, 13th; rain and wind storms 16th, 27th; frogs, robins, blackbirds 21st.

Philadelphia, Pa.—Snows, light 2d, heavy 6th; heavy rain all day 27th, lighter 28th.

Horsham, Pa.—Frogs, blackbirds 30th; oats sowing 31st.

Plymouth Meeting, Pa.—Snow 6th, 7th; severe sleet storm 13th; violent wind, rain 27th; ground frozen till 20th.

White Hall, Pa.—Snows, six inches 7th, two inches 8th, two inches and hail 13.5 inches 16th, with rain 27th; bluebirds 19th.

Factoryville, Pa.—Snows, six inches and rain 13th, with stormy wind 16th, with east gale and rain 27th; bluebird 26th; mud 31st.

Reading, Pa.—Snow, rain, hail, 12th; high wind 13th; gale, rain, 27th.

Parkersville, Pa.—Smoky 19th to 27th (six days) and 30th, 31st.

Ashland, Pa.—Great storm 27th, houses rocked like cradles.

Ephrata, Pa.—Terrible sleet and snow 12th, 13th; east storm, rain, 16th; snow, rain, 27th; frogs 19th; pewee 25th.

Carlisle, Pa.—Sleet, snow, rain, 13th; plowing 25th; sleet, rain, high wind, 26th, 27th; blackbirds, robins, 29th. Oats not yet sown; roads bad.

Fountain Dale, Pa.—Sleet, snow, 13th; great east snow-storm, then high west wind, 16th; east rain-storm 27th. A stormy month.

Tioga, Pa.—Good weather and sleighbing to 15th; severe storms, snow, 16th; snow, sleet, rain, 27th; robins 24th; bright aurora 30th.

Grampian Hills, Pa.—Snows, 13th, 28th, ten inches 16th, with rain 27th; thirty-one inches of snow in March, and ninety-three inches since November 1, 1869.

Johnstown, Pa.—One foot snow 15th, 16th; rain all 27th.

Franklin, Pa.—Alleghany River open all winter.

Pittsburg, Pa.—Thunder-storm 12th; snow, high wind, 13th; hard freeze 25th; rain, night of 26th, with high wind 27th.

Brownsville, Pa.—Robins 10th; hail, thunder, lightning, snow, 12th, 13th; three inches snow 16th. A cloudy month, and backward.

New Castle, Pa.—Rough, wintry March; only three clear days.

Canonsburg, Pa.—Robins 5th; bluebird 14th; blackbird 25th; strong southwest wind 26th. Snow on nine days.

Milford, Del.—Thunder and lightning 16th; wild geese 20th; freeze 25th, 26th; east rain-storm 27th.

Emmitsburg, Md.—Gale in night, trees coated with ice, 13th; heavy snow-storm last night, 16th. March and January same mean temperature.

Johnsontown, Va.—Snow, rain, 6th; heavy thunder-shower 16th; ground frozen 24th; gale, rain, 26th; dandelions 30th.

Hampton, Va.—Blossoms, peach 20th, wild plum 25th. Seventeen frosts in month, which was 1° colder than last March.

Zuni Station, Va.—Thunder-storms 12th, 16th; auroras 13th, brilliant 28th. Peaches mostly killed.

Comorn, Va.—Hail 4th; thunder-shower 12th; gale, rain, 16th, 27th.

Vienna, Va.—Frogs 11th; cherry and peach blossoms 28th.

Piedmont, Va.—High wind, snow, 16th; thunder-showers 21st.

Snowville, Va.—Light snows 6th, 7th, 8th, 16th 27th; showers 11th, 12th.

Wytheville, Va.—Furious wind 13th; snowy 16th, 17th. A cold, wet month; no oats sown; wheat looks promising.

Chapel Hill, N. C.—Rain, hail and sleet, and freeze, 6th.

Albemarle, N. C.—High winds, rain, thunder, 12th, 13th; cold, high wind 16th; peach in full bloom 17th; pear on 30th.

Statesville, N. C.—Rain froze on trees 6th; ground white with snow 16th.

Holland's Store, S. C.—Wild plums blossom 2d; thunder-storms 12th, 30th; peaches nearly all killed 21st; great freshet 31st.

Goodeysville, S. C.—Light snow 16th. March cold, spring backward.

Fort Mill, S. C.—Cold wet March, heavy floods.

Bluffton, S. C.—Orange trees hurt by black frosts in February.

Berne, Ga.—Thunder-storm with hail 7th; with rain and gale 12th; gale 27th, 28th, 29th.

Rockville, Ala.—Ground frozen 8th; pear blossoms 13th; ice half an inch thick 16th; mocking bird 18th; apple blossoms 21st.

Coatopa, Ala.—Martins 12th; ice 16th; heavy frost 18th.

Fish River, Ala.—Frosts 9th, 17th, 18th, 19th; heavy rain 24th, 25th.

Jacksonville, Fla.—Gardens and crops in good condition.

Pilatka, Fla.—Severe frost 19th; severest gale and rain in many years, from p. m. of 23d to night of 25th; month 3° colder than last year.

Bremond, Texas.—Corn and peaches killed by freeze 15th; corn replanted 26th; stock doing well on grass 31st.

Oakland, Texas.—Frost 13th, 31st; ice 15th, killed cotton and corn.

Lockhart, Texas.—Corn, &c., killed 15th, 16th; copious thunder-showers 21st, 24th. But little planting done yet.

Clinton, Texas.—Frosts, slight, 13th, 31st; severe 16th; ice 15th, 16th; thunder-storms 21st, 25th.

Austin, Texas.—Violent northwest wind, thunder, lightning, little rain, 12th; frosts 13th, 16th; thunder, lightning, 24th, 25th.

New Orleans, La.—Ice 9th, 16th; frosts 10th, 18th.

Columbus, Miss.—Frosts 8th, 9th, 10th, 16th, 17th, 18th, many peaches killed; apples and pears safe. Coldest March in sixteen years.

Marion, Miss.—Peach crop killed by frost and ice 8th to 18th.

Brookhaven, Miss.—In summer night-rains are rare; from March to June it rains only in the night. *Near Brookhaven, Miss.*—Wild geese 2d; frost 8th, 9th, 10th; ice 8th, 9th, 10th; strawberry blossoms 23d; martins 25th.

Natchez, Miss.—Severe thunder-storm, wind, hail, 12th; cold, frosty, 13th to 19th; heavy thunder-storm 25th.

Elizabethton, Tenn.—Wild geese 15th; barn swallow 28th.

Clarksville, Tenn.—Strong gale 12th; barometer lowest ever known here, except in January, 1867.

Trenton, Tenn.—Less wind and more rain than usual.

Memphis, Tenn.—Heavy thunder-storm and gale 12th; thunder-storm, then severe gale and snow, 15th.

Pine Grove, Ky.—Snow 1st; hail, snow, rain, 3d, 6th; violent thunder-storm, hail, gale, 12th; rain all 30th, 31st.

Shelby City, Ky.—Furious gale, thunder, lightning, rain, hail, 12th. Month 5.5° colder than its average for ten years.

New Lisbon, Ohio.—Snow-storm 2d; rain and snow 4th; heavy fall of snow 27th. River not yet frozen over.

Salem, Ohio.—Robin 11th; bluebird 20th. No plowing done.

Painesville, Ohio.—Robins 15th; rivers free of ice 20th; bluebirds 21st.

Cleveland, Ohio.—Lowest barometer in twelve years 13th; robins 15th; pigeons 25th; rain, then snow, 27th.

Oberlin, Ohio.—High wind and snow-squalls 17th; first thunder and lightning 20th; only clear day 24th.

North Fairfield, Ohio.—Rain, noon 26th to 5 p. m. 27th, then snow; rain all 31st. Peaches uninjured; fruit prospect good.

Gambier, Ohio.—Pigeons, crows, 10th; lowest barometer in several years 12th; frogs 20th.

North Bass Island, Ohio.—Sleet, rain, hail, snow, 3d, 12th, 27th; ice on Lake Erie broken up 29th to 31st. Snow on 13 days.

Hillsboro, Ohio.—Rain, snow, high wind, 12th; rain all 26th, 27th, 31st.

Toledo, Ohio.—Severe northeast snow-storms 11th and 12th, 15th; severe northeast rain-storm 30th and 31st.

Urbana, Ohio.—Month 2.5° above average of eighteen years.

Jacksonburg, Ohio.—Snow-storms 8th, 12th, 16th; violent 15th; thunder-storm 12th; aurora 21st. Coldest March since 1843.

Cincinnati, Ohio.—Severe snow and gale 15th; heavy snow 16th.

Detroit, Mich.—Sleet, snow, rain, 12th, 13th; lightning, rain, 20th; robins 20th; jays 23d; frogs 29th.

Adrian, Mich.—No violent storms in March; good fruit prospect; spring promise good.

Litchfield, Mich.—Aurora 10th; wind, rain, and deepest snow since October 2d, 15th; bluebird 23d; roads muddy 31st.

Northport, Mich.—Robin 28th. An equable, quiet month.

Muskegon, Mich.—Eighteen inches snow 12th, 13th.

Copper Falls, Mich.—Very mild March; northeast winds were warm more than half the month.

Benzonia, Mich.—Cold rain and storms last half of month.

Aurora, Ind.—Aurora 21st; rain all 26th; martins 31st.

Teray, Ind.—Rain, sleet, snow, 6th; thunder-storm, snow, 12th, mercury fell from 60° to 28° by 13th; snow-squalls 16th; rain all 26th; high wind 27th.

Spiceland, Ind.—High wind, heavy rain, thunder and lightning, 12th; lowest barometer ever known here.

Laconia, Ind.—Thunder-showers, sleet, snow, gale, 12th; mercury 66° at 4 p. m., 32° at 9 p. m.; snow all 16th; aurora 21st; martins 29th.

Indianapolis, Ind.—Rain, thunder, lightning, 11th, 12th; heavy snow with west and southwest wind, 15th.

New Harmony, Ind.—Heavy thunder-storm, snow, 11th; and lowest barometer in eighteen years 12th; snow 15th and all 16th.

Marengo, Ill.—Great snow-storms, eight inches, 12th; 5.5 inches 15th; rain, snow, sleet, 20th; larks 23d; blackbirds 25th.

Louisville, Ill.—Hail, thunder, lightning, 5th, 12th; frogs 10th; planting potatoes, onions, and peas in March.

Belvidere, Ill.—Month moderate, some plowing done.

Mineral Ridge, Ill.—Hail, sleet, thunder, lightning, high wind, 11th; furious snow-storm 14th, 15th and 16th.

Ottawa, Ill.—Wild geese 9th; robins, bluebirds, 10th; rain, snow, 11th, 12th, 13th, 19th, 20th; rain 25th, 26th, 27th.

Winnebago, Ill.—Snow-storm 11th, 12th, 13th; heavy snow 15th; rain, thunder, snow, 20th; robin 24th; bluebird 25th.

Rochelle, Ill.—Great snow and rain-storm 11th, 12th.

Wyand, Ill.—Great storm, freezing rain, hail, snow, 12th, 13th; drifting snow-storm 15th; spring birds 21st.

Tiskilwa, Ill.—Rain, furious snow, robins, wild geese, 12th.

Hennepin, Ill.—To 9th variable; 11th to 18th wintry; to 31st misty, sunny, muddy. (S.)—Larks 10th; sleet 11th; rain, sleet, snow, (freezing on and breaking down trees 12th;) prairie chickens cooing 24th.—(O.)

Dubois, Ill.—Heavy thunder 6th; frogs 9th; robins 11th; rain, furious gale, snow, 12th; thunder, hail, snow, 15th; red aurora 21st.

Manchester, Ill.—Thunder, snow-storm, 12th; distant thunder 28th.

Mount Sterling, Ill.—Thunder-storm from south 11th; from southwest 20th; rain 18th. Roads bottomless; intercourse between towns suspended.

Augusta, Ill.—Thunder-shower 11th; severe rain and snow 12th; rain, driving snow, 14th; terrific wind and snow 15th, 16th.

Manitowoc, Wis.—Aurora 21st; robins 26th; blackbirds 30th.

Hingham, Wis.—Aurora 21st. Snow of winter seventy-six inches.

Milwaukee, Wis.—Snow began at St. Louis 8 a. m., here 6.30 p. m., 3d; at St. Paul last evening, here 11.30 a. m. 11th; snow all 12th, 15th; auroras 21st, 22d; ice left Milwaukee River 30th.

Embarrass, Wis.—Aurora 1st; great snow and wind 15th; blue crane, crows, 21st; bluebirds 23d; willow blossoms 29th.

Mosinee, Wis.—Crows 1st. Deep snow hinders logging and sugar making.

St. Paul, Minn.—Rain on five days, twenty inches snow on eight, and nine fair days in March. Winter snow fifty-three inches, and one hundred days of sleighing.

Minneapolis, Minn.—Terrible snow-storm 14th, 15th, 16th; sleighing ended 27th, after ninety-five days.

Koniska, Minn.—Snow, mixed with dark sand or ashes, 10th; river opened 26th; bluebirds, ducks, wild geese, 27th.

New Ulm, Minn.—Heavy snow all 15th; river opening 31st.

Madelia, Minn.—Geese 26th; ducks 30th; Watonwan River open 30th. March snow 30.75 inches.

Missouri Valley, Iowa.—Thunder, snow-storm, 3d; great snow-storm 12th, 13th, 14th. Late spring; no wheat sown yet.

Sioux City Iowa.—Snow-squalls, hurricane, 14th, 15th, 16th; two persons and many cattle perished in it in this vicinity.

Clinton, Iowa.—Severe gale, rain, snow, 11th, 12th; severest gale and snow since January 1st, 1864, 15th; thunder 20th; robins 23d.

Waukon, Iowa.—Severe snow-storms 11th and 12th, 14th and 15th, some twenty-five inches in all, badly drifted; robins 25th; bluebirds 28th.

Bowen's Prairie, Iowa.—Severe gale and snow 11th. Very little plowing done; not one cloudless day in March.

Fort Madison, Iowa.—Freezing rain 12th; severe drifting snow 14th, 15th; equinoctial storm 21st; very bad roads 30th.

Guttenberg, Iowa.—Worst month for cattle this winter; slush and mud since 19th; snow all gone; no freshets.

Independence, Iowa.—Gale, rain, snow, hail, 11th, 12th; furious snow, rain, 14th, 15th; rain, snow, 19th, 20th. *Near Independence.*—Heavy snow 15th; geese 26th. Less wind in March than for several years.

Waterloo, Iowa.—More snow than in January and February.

Rockford, Iowa.—More snow and drifting than all winter 11th, 12th; more snow yet, and worse drifting 14th, 15th.

Iowa Falls, Iowa.—Thunder, hail, snow, 11th, 12th; snow, rain, sleet, high wind, 15th to 18th; aurora 25th; spring birds 27th.

Ames, Iowa.—Rain, hail, snow, 11th, and with worse wind 14th, 15th.

Algona, Iowa.—Snows all day, six inches, 3d, six inches 11th, fearfully furious 14th, 15th, 16th, during which many persons in this State and Minnesota perished, also many cattle.

Boonesboro, Iowa.—Thunder-storm of hail, snow 12th; hurricane with snow 14th, 15th. Month 6.5° below the average of thirteen years, and 13° below March of 1868.

Fontanelle, Iowa.—Sleet, great snow-storm 14th, 15th, 16th.

Grant City, Iowa.—Snows, four inches, 13th, and with rain and gale 14th, 15th, 16th, in which many people, cattle, and sheep perished.

Logan, Iowa.—Thunder, snow-storm, 11th; terrible snow and wind of seventy-two hours, 14th, 15th, 16th; mercury fell to 7° below zero, and many lives were lost.

Woodbine, Iowa.—Thunder, snow-storm 11th; three days driving snow 14th, 15th, 16th; spring birds 25th.

West Union, Iowa.—Auroras 1st, 9th, 27th; drifting snow 12th; deepest snow of the winter 15th.

St. Louis, Mo.—Rain, snow, high winds, thunder, lightning, 12th; rain, thunder, lightning, 14th; snow, high winds 15th; high winds, snow, hail, 16th.

Allenton, Mo.—Thunder-storms 12th, 29th; barometer 28.430 on 12th, lowest in thirty-four years.

Hematite, Mo.—Yellow crocus 2d; thunder-shower, snow, 12th; wrens 15th; grasshoppers 18th; aurora 21st; hail 29th.

Kolla, Mo.—Thunder-shower 11th; freezing rain, high wind, severe snow-storm, 12th; thunder, freezing rain, snow, 14th; light snow, frosty, 16th; thunder, rain, hail, 29th.

Jefferson City, Mo.—Lightning, rain, 11th; rain, heavy snow, 12th; thunder-storm from south 29th.

Kansas City, Mo.—Springs low, ground dry, oats sown.

St. Joseph, Mo.—Thunder, little rain, heavy wind, 11th.

Oregon, Mo.—Wild geese, robins, 8th; great storm 9 a. m. 14th to 5 p. m. 16th; auroras 20th, 21st, 22d. Peaches yet safe.

Atchison, Kans.—Thunder and lightning 3d, 19th; with rain 28th. Missouri river open all winter.

Paola, Kans.—High winds 3d, 10th, 11th; very cold 14th, 15th; frogs 11th; larks 17th; gale, thunder-shower, 28th; copious rain 29th.

Lawrence, Kans.—Kansas river closed 15th; opened 17th.

Holton, Kans.—Martins 11th; gale 12th; snow squall 14th; air full of fine snow 16th; pewee, robins, 26th.

Neosho Falls, Kans.—Very cold, cloudy, windy month; little rain.

Le Roy, Kans.—Smoky 3d to 17th, and 24th to 31st; first flowers 24th.

Council Grove, Kans.—Air full of fine snow 14th; severe cold wind-storm 16th; aurora 21st; copious rain 28th.

Crawfordsville, Kans.—Thunder, dry, 10th; snow 12th; showers 28th.

Omaha Agency, Neb.—Snow, drifting, 14th; more violent 15th; ceased 16th; snows 28th, 29th.

De Soto, Neb.—Thunder, snow, freezing rain, 3d; thunder, snow-storm, 11th; snow 15th, 16th.

Bellvue, Kans.—Terrific cold wind, snow 14th, 15th, 19th; slight rains 18th, 19th, 24th.

Nebraska City, Neb.—Dusty, bluebirds, 2d; thunder, snow-storm, 3d; roads dry, robins, &c., 11th; snow, high wind, 14th, wind worse, river frozen over, 15th; snow ceased, river crossed on foot, 16th; river open 19th; aurora 21st; sap suckers 27th.

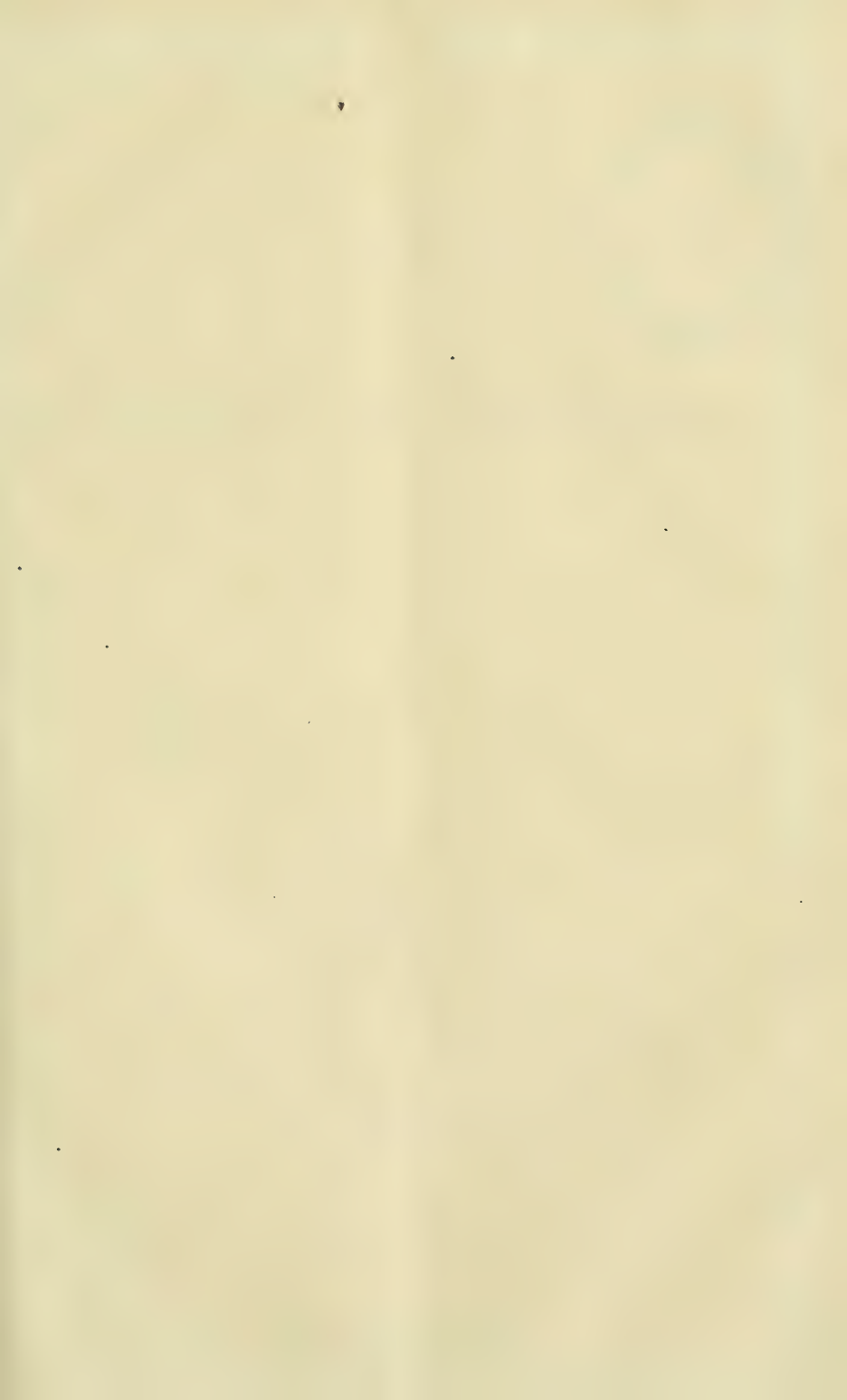
Harrisburg, Utah.—Early March hard frosts, killed peaches, apricots and trees weakened by grasshoppers. Month windy, dry; little snow.

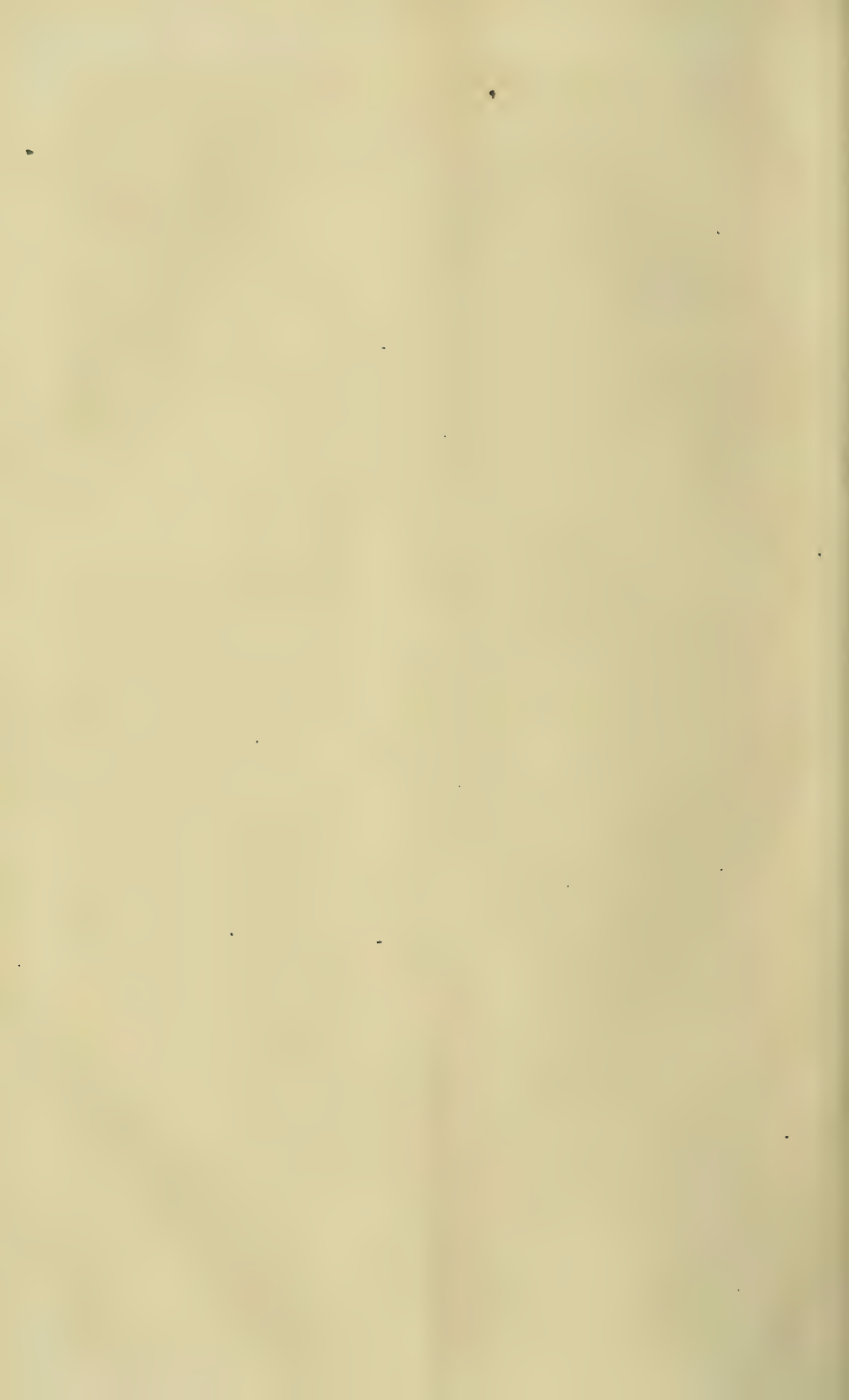
Watsonville, Cal.—Apple blossoms 18th. Season late, but pleasant month; grain looks well.

Cahto, Cal.—Grouse calling 1st; laurel and strawberry blossoms 5th; quails mating 28th.

Deer Lodge City, Mont. Ter.—Wild geese 11th; plowing, bluebirds, 26th; larks, robins, 29th; kildeers 30th. Coldest March since 1867. Much snow on mountains; valleys dusty. No thunder, lightning, hail, nor auroras this month, and no sleighing this winter.

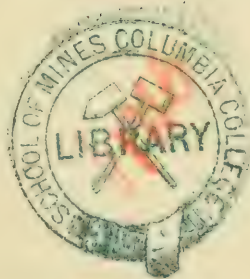
Missoula Mills, Mont. Ter.—Ground frozen nine inches 14th; wild geese 18th; heavy frost 28th; frost out of ground, grass green, stock improving 30th; faint aurora 30th.





MONTHLY REPORT

OF THE



DEPARTMENT OF AGRICULTURE,

FOR

MAY AND JUNE,

1870.



MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE, STATISTICAL DIVISION,
Washington, D. C., June 22, 1870.

SIR: I herewith present for publication a condensed statement of the condition of the crops for May and June, together with a variety of extracts from the correspondence of the Department, followed by a report of the Botanist on his recent botanical explorations of East Tennessee, an account of the short-horn cattle sale at Xenia, Ohio, a letter on the Rhea fiber, notice of trials of harvesting machinery in Missouri and Ohio, with brief articles on West Newbury Farmers' Club, how to kill the curculio, the State of Oregon, the reclamation of tide-lands in New Jersey, tables of imports and exports, the Kew Gardens, facts from various sources, meteorological tables and notes for April and May, &c.

J. R. DODGE,
Statistician.

Hon. HORACE CAPRON, *Commissioner of Agriculture.*

CONDITION OF THE CROPS.

The season, thus far, has been very favorable to vegetable growth, except in the single element of moisture. The average heat has been greater in nearly all the States than in April and May of 1869, (in the West by a difference of 6° to 7° .) There has been a due proportion of sunlight, with few occurrences of destructive storms, but the rain-fall has been deficient in New England, in New York, between the Ohio River and the northern lakes as far west as Lake Michigan, on the west side of the Mississippi south of Iowa, and in the cotton States from South Carolina to Louisiana. A moderate amount, three to four inches in May, is noted in Texas, Tennessee, Kentucky, Kansas, Iowa, and Wisconsin; and four to six inches in May, a very good supply, in the seaboard States from New Jersey to North Carolina, and in Minnesota and Nebraska. The rain in May was mostly in the latter portion of the month.

The heat of April in the West was remarkable. Minnesota exhibited an excess of 10° over the mean temperature of April, 1869. The average increase of 7° is shown for the entire district west of Ohio, north of the Ohio River, and east of the Missouri. Ohio and Kentucky were only 2° warmer, while Tennessee and the Gulf Coast States were cooler than last year by about 2° . In the rainy district south of New York and north of South Carolina, the mean temperature was about the same as last year; while in New England and New York it was higher—in New York by 4° . In May nearly the same excess above the mean tem-

perature of the preceding May is observed through out the West, the greatest difference being observed in Michigan. In the New England States, with the exception of Massachusetts, the temperature is somewhat higher, and in New York 4° higher. In the other Atlantic States, and in the cotton States, the temperature of May has also been higher by about 4°.

Future returns will reveal the truth or falsity of predictions of the weatherwise that the present will be a season of unusual heat and drought.

The following is a comparison of the mean temperature and rain-fall of April and May compared with those months of last year:

| STATES. | APRIL. | | | | MAY. | | | |
|----------------------|------------|-------|------------|-------|------------|-------|------------|-------|
| | 1869. | | 1870. | | 1869. | | 1870. | |
| | Mean temp. | Rain. | Mean temp. | Rain. | Mean temp. | Rain. | Mean temp. | Rain. |
| Maine | 41.1 | 2.57 | 44.1 | 4.58 | 53.2 | 4.52 | 54.0 | 1.80 |
| New Hampshire | 41.4 | 1.73 | 45.5 | 3.78 | 54.9 | 3.52 | 55.6 | 2.03 |
| Vermont | 39.9 | 1.48 | 45.2 | 2.69 | 54.2 | 3.72 | 56.4 | 1.48 |
| Massachusetts | 45.6 | 2.58 | 46.4 | 5.71 | 61.2 | 6.22 | 57.2 | 2.33 |
| Rhode Island | 46.7 | 1.94 | | | 54.6 | 6.04 | | |
| Connecticut | 46.4 | 2.04 | 48.3 | 4.63 | 55.9 | 5.68 | 59.4 | 2.08 |
| New York | 44.4 | 2.15 | 48.0 | 3.03 | 54.4 | 3.56 | 61.7 | 2.05 |
| New Jersey | 46.4 | 1.55 | 51.4 | 5.58 | 58.7 | 4.54 | 62.5 | 5.10 |
| Pennsylvania | 48.7 | 2.04 | 50.8 | 4.61 | 57.8 | 4.84 | 62.5 | 4.31 |
| Maryland | 53.9 | 2.54 | 53.4 | 5.58 | 61.6 | 4.93 | 64.8 | 4.96 |
| District of Columbia | 53.8 | 2.08 | 53.8 | 3.70 | | | 64.5 | 4.70 |
| Virginia | 54.9 | 2.46 | 54.4 | 4.68 | 60.9 | 5.89 | 65.5 | 5.02 |
| West Virginia | 51.4 | 1.90 | | | 60.4 | 2.00 | | |
| North Carolina | 58.9 | 2.96 | 57.0 | 3.04 | 63.8 | 4.58 | 66.1 | 6.14 |
| South Carolina | 61.5 | 2.98 | 63.7 | 2.74 | 67.8 | 1.19 | 72.3 | 2.70 |
| Georgia | 62.1 | 5.17 | 60.3 | 1.75 | 67.2 | 2.67 | 70.3 | 1.09 |
| Alabama | 62.7 | 8.39 | 61.5 | 2.38 | 69.7 | 1.69 | 73.4 | 1.04 |
| Florida | 69.0 | 3.36 | 66.7 | 2.15 | 72.1 | 1.11 | 76.9 | 1.40 |
| Texas | 66.6 | 3.76 | 67.7 | 4.85 | 73.9 | 3.45 | 75.2 | 3.33 |
| Louisiana | 65.5 | | 64.9 | 3.75 | 70.0 | | 75.5 | 1.90 |
| Mississippi | 63.7 | 11.43 | 61.1 | 4.15 | 70.4 | 1.77 | 71.8 | 2.44 |
| Tennessee | 57.4 | 5.96 | 56.4 | 3.39 | 64.0 | 3.00 | 67.8 | 3.92 |
| Kentucky | 53.5 | 5.32 | 55.2 | 3.46 | 62.5 | 2.70 | 67.6 | 3.98 |
| Ohio | 49.2 | 2.95 | 51.7 | 2.24 | 59.4 | 6.49 | 67.1 | 1.77 |
| Michigan | 40.9 | 3.05 | 48.7 | 2.50 | 52.5 | 3.58 | 61.2 | 2.13 |
| Indiana | 46.2 | 5.06 | 54.0 | 2.21 | 59.6 | 6.39 | 66.2 | 1.61 |
| Illinois | 46.1 | 3.92 | 53.2 | 1.48 | 59.4 | 5.48 | 65.8 | 1.60 |
| Wisconsin | 41.1 | 3.99 | 48.8 | 0.79 | 53.9 | 5.00 | 62.4 | 3.45 |
| Minnesota | 40.7 | 1.32 | 50.0 | 0.85 | 57.8 | 2.28 | 65.1 | 4.24 |
| Iowa | 44.7 | 2.66 | 51.1 | 0.63 | 59.1 | 4.58 | 65.7 | 3.18 |
| Missouri | 54.1 | 3.62 | 56.0 | 1.88 | 63.6 | 4.53 | 68.1 | 2.20 |
| Kansas | 52.1 | 3.19 | 56.2 | 1.56 | 62.7 | 4.46 | 68.9 | 3.39 |
| Nebraska | 48.5 | 2.14 | 53.3 | 1.74 | 61.9 | 4.02 | 66.3 | 5.31 |
| Utah | 43.1 | | | | 57.6 | | | |
| California | 60.5 | 1.77 | 57.4 | 1.87 | 62.7 | 0.54 | 65.9 | 1.10 |
| Montana Territory | 53.1 | 2.95 | | | | | | |
| Washington Territory | 51.0 | 5.64 | | | | | | |

WHEAT.

The estimates of acreage, compared with the area of 1869, is as follows: Reduction in winter wheat, in New Hampshire, 1 per cent.; Vermont 3, Massachusetts 4, New York 4, Maryland 10, South Carolina 1, Georgia 1, Alabama 6, Mississippi 20, Texas 6, Arkansas 2, Missouri 7, Illinois 15, Indiana 6, Ohio 4, Michigan 5, Wisconsin 5, Iowa 10. In spring wheat, Vermont 2, Massachusetts 5, New York 3, Pennsylvania 1, Missouri 3, Illinois 18, Indiana 20, Ohio 7, Michigan 1, Wisconsin 8, Iowa 8, Nebraska 3, Oregon 7. Increase in winter wheat: New Jersey 3, North Carolina 5, West Virginia 8, Kentucky 2, Minnesota 2, Kansas 17, Nebraska 25, California 5. The following States report no change

in acreage of winter wheat: Connecticut, Pennsylvania, Delaware, Virginia, Tennessee, Oregon. Increase in spring wheat: Maine 2, New Hampshire 4, Minnesota 2, Kansas 14, California 5. The average decrease throughout the country is placed at 930,000 acres, or nearly 5 per cent.

The following States report conditions of winter grain above an average: New Hampshire, New Jersey, Delaware, Virginia, North Carolina, Georgia, Alabama, Mississippi, Tennessee, West Virginia, Kentucky, Minnesota, Nebraska, and Oregon. The percentage of reduction in leading States reporting unfavorably is as follows: Illinois 15, Indiana 13, Ohio 13, Michigan 24, Iowa 11, Missouri 16, Kansas 6, California 8, New York 10, Pennsylvania 6, Texas 3. In spring wheat, the States above an average are Maine, New Hampshire, Pennsylvania, West Virginia, and Minnesota; of those below, the principal are, Illinois 9 per cent., Missouri 15, Indiana 14, Ohio 10, Michigan 12, Wisconsin 7, Iowa 2, Nebraska 4, California 20.

The superiority of early-sown winter-wheat, manifested at the opening of spring, is fully maintained to the present time. In deep and mellow soils, notwithstanding a lack of rain and a mean temperature unusually high, it has a vigorous appearance, and if the straw is shorter than usual, the head is plump and well filled. In some poor soils, where the surface is as hard as a roadway, plants stand thin, with short straw, and heads irregularly formed. Such is the case in many places in the Ohio Valley, and to some extent in the Gulf States. Throughout the dry sections the straw is shorter than usual. Fields seeded with the drill uniformly appear better than those sown broadcast. Where the plant has succumbed to freezing in winter or drought in spring it has generally been, except in very wet or very poor locations, upon land roughly or carelessly prepared.

Among the diseases and casualties reported, rust has had a very limited range; hail storms have caused damage in the Ohio Valley; driving rains have beaten down some fields in Virginia and North Carolina; Utah has been ravaged by grasshoppers; and in Contra Costa County, California, squirrels have taken wheat "by the acre daily," until public meetings have been called to repel the invaders.

COTTON.

The cotton-growers seem determined this year to reduce the price to fifteen cents, with every prospect of doing it. The acreage is materially increased in every State, while that of wheat (and probably of corn, though the county estimates of the entire country do not come in till July 1) has decreased. If neglect of all other interests can only be cured by cheap cotton, the sooner the reduction comes the better. The condition of the growing crop in North Carolina is good; in South Carolina it is looking well, except that some complaint of bad stands is made; in Georgia it is late, and smaller than usual from effects of a drought of five weeks which terminated May 25, but is growing vigorously now; the dry term was shorter in Florida and Alabama, and cotton is generally in good condition; reports from Mississippi are still more favorable; in Tensas Parish, Louisiana, where the greatest cotton yield of 1869 was made, the condition of the crop is twenty per cent. better than last year, and the acreage is increased one-fifth; from Texas come reports of a backward spring, with cotton late but thrifty and promising; and no State makes more favorable returns than Arkansas. The average condition of cotton is better than last year at this time—a fact desirable and gratifying in itself, but of no controlling force in determining the

ultimate result. Last season was unpropitious to August, and afterward favorable to an almost unexampled degree, a tenth of the crop being due to the extreme length and propitious character of the autumnal season. The acreage of sea-island cotton in Texas has been increased.

CORN.

The returns relative to corn, though desultory and partial, indicate an average condition. Systematic and complete data for all the States, up to July 1, will be given in the next report.

BARLEY.

Winter barley has nearly the same breadth as last year; the spring sowing has been increased. Its condition is fine in the States west of the Mississippi, except Missouri and California, but is subject to the same reduction as wheat in the Ohio Valley.

OATS.

There has been everywhere an increase of acreage. The condition of this crop is superior on the Atlantic coast from Maine to North Carolina, with the exception of Massachusetts and New York; in the dry sections of the West and South it is unpromising.

GRASSES.

The grasses are generally flourishing on the Atlantic coast, the Alleghanian range into Tennessee, and in Minnesota, Iowa, and Nebraska; elsewhere below an average. Clover, in a less marked degree, is thriving in the same sections. It is more sown than usual, and is reported favorably in Mississippi and Alabama, and some other southern States.

FRUITS.

The promise is very general for an abundant supply of apples, pears, peaches, and other fruits, especially in the New England and in the middle States.

Frost, in some portions of the West, and in some of the southern States, has injured the peach crop, but Kentucky, Illinois, and Michigan report more than an average prospect. A full crop of peaches, with the aid of young orchards coming into bearing, which will give fruit of superior quality, may be expected in Maryland and Delaware. Some complaint exists of the blossoms blighting in Virginia. Frost injured peaches somewhat in North Carolina; and in the Gulf coast States frosts in February and March were very destructive. In Missouri and Illinois great losses were incurred by frosts in April, amounting to nearly total destruction at several points. In parts of Illinois, however, a fair crop will be gathered; and a fine crop may be expected in Michigan. The peach regions mostly depended on for market supplies will harvest fully an average crop.

It is a great apple year in New England; even in Aroostook, Maine, where the trees in blossom were covered with ice, moderate weather, without sunshine, saved the fruit. The amount of bloom was also extraordinary in New York, and the promise of a fine crop is excellent, as in all the middle States, with some drawbacks from heavy rains and falling of blossoms in Pennsylvania and Maryland. In Virginia the same difficulty exists in an intensified form, and in many places the twigs on the extreme ends of the branches are dying from some unknown cause. The reports from West Virginia and Kentucky are variable, from

the best crop ever known to failure from frost. In Michigan favorable reports greatly predominate. In the Ohio Valley, Missouri, and Kansas, the frost which killed peaches also injured the apples greatly.

The pear crop, comparatively limited in area and quantity as it always is, promises to average quite favorably with former years. Some correspondents claim that the September gale on the New England coast facilitated fruiting; and one instance is given of a pear tree in Bristol, Massachusetts, which was nearly torn up by the roots, and bloomed in the spring profusely, and is maturing a fine crop of fruit. In parts of Pennsylvania pear blossoms were less abundant than the bloom of other fruits. In Luzerne County pear orchards are rapidly increasing, and this fruit is becoming a staple. Pears are a failure in St. Clair County, Michigan, while apples will be abundant.

The small fruits have been comparatively abundant. Immense quantities were sent to Chicago and other cities from Southern Illinois, and very low prices were reached. The San Francisco market was very abundantly supplied; twenty tons per day were sent from one county, Contra Costa, and sold at eight to twelve cents per quart at retail. In Washington and Baltimore similar rates prevailed in the height of the season.

Table showing the condition of the crops, &c., on the 1st day of June, 1870.

| States. | WINTER WHEAT. | | WINTER RYE. | | WINTER BARLEY. | | SPRING WHEAT. | | SPRING BARLEY. | |
|----------------|----------------------------------|---------------------------|----------------------------------|---------------------------|----------------------------------|---------------------------|--|---------------------------|--|---------------------------|
| | Acreage compared with last year. | Average condition June 1. | Acreage compared with last year. | Average condition June 1. | Acreage compared with last year. | Average condition June 1. | Acreage sown this spring compared with last. | Average condition June 1. | Acreage sown this spring compared with last. | Average condition June 1. |
| Maine | | | 9.8 | 10.4 | | | 10.2 | 10.3 | 10 | 10.3 |
| New Hampshire | 9.9 | 10.2 | 9.8 | 10.1 | | | 10.4 | 10.2 | 9.7 | 10.3 |
| Vermont | 9.7 | 9.8 | 9.8 | 9.2 | | | 9.8 | 9.7 | 9.8 | 9.8 |
| Massachusetts | 9.6 | 9.7 | 9.6 | 9.3 | | | 9.5 | 9 | 10.2 | 9.8 |
| Rhode Island | | | 10.3 | 10.6 | | | | | 10 | 10 |
| Connecticut | 10 | 9 | 10.5 | 10.2 | | | 10 | 9.5 | 10 | 9.5 |
| New York | 9.6 | 9 | 9.7 | 9 | 10 | 9.3 | 9.7 | 9.2 | 9.7 | 9.3 |
| New Jersey | 10.3 | 10.1 | 10 | 9.7 | | | | | | |
| Pennsylvania | 10 | 9.4 | 9.6 | 9 | 9.7 | 9.3 | 9.9 | 10.1 | 9.4 | 10.1 |
| Delaware | 10 | 11 | 10 | 10 | | | | | | |
| Maryland | 9 | 9 | 10 | 9.8 | | | | | | |
| Virginia | 10 | 10.6 | 9.8 | 9.9 | | | | | | |
| North Carolina | 10.5 | 11.2 | 9.8 | 10 | 10 | 10.2 | | | | |
| South Carolina | 9.9 | 9.7 | 9.4 | 10.1 | 10 | 9.3 | | | | |
| Georgia | 9.9 | 10.7 | 9.7 | 10.5 | 10.2 | 10 | | | | |
| Florida | | | | | | | | | | |
| Alabama | 9.4 | 10.8 | 10 | 10.2 | 8.6 | 9.6 | | | | |
| Mississippi | 8 | 10.6 | 9 | 10.3 | | | | | | |
| Louisiana | | | | | | | | | | |
| Texas | 9.4 | 9.7 | 10.4 | 9.2 | 12 | 10.2 | 8.5 | 8.7 | | |
| Arkansas | 9.8 | 9.9 | 10.1 | 10.2 | 9.6 | 9.6 | | | | |
| Tennessee | 10 | 10.9 | 9.7 | 10.5 | 9.8 | 10.5 | | | | |
| West Virginia | 10.8 | 10.5 | 9.4 | 10.3 | 9.7 | 10 | 10 | 10.3 | 12.5 | 10.5 |
| Kentucky | 10.2 | 10.6 | 9.4 | 10 | 10.3 | 10 | 10 | 9.3 | 11 | 9.5 |
| Missouri | 9.3 | 8.4 | 9.3 | 8.5 | 9.6 | 9 | 9.7 | 8.5 | 10.2 | 8 |
| Illinois | 8.5 | 8.5 | 9 | 8.2 | 9.8 | 8.8 | 8.2 | 9.1 | 9.1 | 8.9 |
| Indiana | 9.4 | 8.7 | 9.2 | 8.9 | 10.1 | 9.1 | 8 | 8.6 | 9.5 | 8.1 |
| Ohio | 9.6 | 8.7 | 9.3 | 8.7 | 9 | 8.1 | 9.3 | 9.0 | 9.4 | 8.8 |
| Michigan | 9.5 | 7.6 | 8.3 | 8.8 | 9.7 | 9 | 9.9 | 9.8 | 10.1 | 9.1 |
| Wisconsin | 9.5 | 9.2 | 9.7 | 8.6 | 9.6 | 9.9 | 9.2 | 9.3 | 10.3 | 9.3 |
| Minnesota | 10.2 | 10.3 | 10 | 10.6 | | | 10.2 | 11 | 10.5 | 10.3 |
| Iowa | 9 | 8.9 | 9.4 | 9.2 | 9.2 | 7.7 | 9.2 | 9.8 | 10.5 | 10.1 |
| Kansas | 11.7 | 9.4 | 10.6 | 9.9 | 11.6 | 9.6 | 11.4 | 8 | 11.1 | 8.6 |
| Nebraska | 12.5 | 10.3 | 10.2 | 10.3 | 10 | 9.5 | 9.7 | 9.6 | 10.6 | 10 |
| California | 10.5 | 9.2 | 11.3 | 9 | 10.3 | 8.6 | 10.5 | 8 | 10.7 | 8.7 |
| Oregon | 10 | 10.4 | 9.3 | 10.3 | 9.3 | 9.8 | 9.3 | 9.6 | 9.5 | 9.5 |

Condition of the crops, &c.—Continued.

| States. | OATS. | | CLOVER. | | SPRING PASTURE. | MAPLE SUGAR AND MOLASSES. | | SHEEP. | |
|---------------------|-------------------------------------|---------------------------|-------------------------------------|---------------------------|---------------------------|--|---|---|---|
| | Acreage compared with last year. | Average condition June 1. | Acreage compared with last year. | Average condition June 1. | Average condition June 1. | Amount of sugar made this year compared with last. | Amount of molasses made this year compared with last. | How many <i>hundredths</i> of the total number of sheep have been lost by disease or other casualty. | How many <i>hundredths</i> of the total number of lambs dropped this spring have died. |
| Maine..... | 10.3 | 10.5 | 10 | 9.8 | 10.6 | 8.6 | 8.6 | 3.2 | 6.5 |
| New Hampshire..... | 10.5 | 10.2 | 10.3 | 10.6 | 10.2 | 5.3 | 5.3 | 3.5 | 8.7 |
| Vermont..... | 10.4 | 10 | 10 | 9.3 | 9.7 | 6.2 | 6.3 | 2.7 | 8 |
| Massachusetts..... | 10.1 | 9.8 | 10.1 | 10.5 | 10 | 3.2 | 2.2 | 3 | 6.8 |
| Rhode Island..... | 10 | 10.3 | 10 | 10.6 | 11 | ..... | ..... | 5.3 | 8 |
| Connecticut..... | 10.5 | 10.2 | 10 | 9.7 | 10.5 | ..... | ..... | 2.6 | 8.6 |
| New York..... | 10.2 | 9.6 | 9.8 | 9.7 | 10.2 | 6.2 | 6.2 | 4.2 | 9 |
| New Jersey..... | 10.5 | 10.3 | 10.3 | 10.5 | 11 | ..... | ..... | 4.6 | 6.1 |
| Pennsylvania..... | 10.5 | 10.4 | 10 | 10.4 | 10.8 | 7.8 | 7.8 | 4.3 | 9.3 |
| Delaware..... | 10 | 10 | 11 | 11.5 | 10.5 | ..... | ..... | 3 | 2.5 |
| Maryland..... | 10.3 | 10.2 | 9.8 | 10.6 | 10.7 | ..... | ..... | 5 | 7.3 |
| Virginia..... | 10.3 | 10.2 | 10.4 | 10.6 | 11 | 11.5 | 11.1 | 5.5 | 9.1 |
| North Carolina..... | 10.4 | 9.9 | 11.5 | 10.7 | 10.6 | ..... | ..... | 7.3 | 7.2 |
| South Carolina..... | 11.5 | 7.3 | 10.5 | 7.3 | 8.2 | ..... | ..... | 5 | 9.5 |
| Georgia..... | 10.4 | 8 | 11.5 | 9.8 | 8.4 | ..... | ..... | 6.2 | 6.5 |
| Florida..... | 10.5 | 10.4 | ..... | ..... | 5.6 | ..... | ..... | 7 | 10 |
| Alabama..... | 10.8 | 8 | 10.6 | 10.5 | 7.6 | ..... | ..... | 7.7 | 5 |
| Mississippi..... | 10.8 | 10.4 | 10.8 | 10.8 | 9.9 | ..... | ..... | 8.5 | 17.8 |
| Louisiana..... | 10.5 | 9 | ..... | ..... | 9.7 | ..... | ..... | 8.1 | 8.8 |
| Texas..... | 10.6 | 8.8 | ..... | ..... | 9.7 | ..... | ..... | 7.5 | 11.2 |
| Arkansas..... | 10.4 | 9 | 12 | 9 | 9.5 | ..... | ..... | 8.6 | 12 |
| Tennessee..... | 10.2 | 9.7 | 11.5 | 11 | 10.7 | 9.3 | 9.6 | 5.4 | 9.1 |
| West Virginia..... | 10.5 | 10.3 | 10.6 | 11 | 10.2 | 9.9 | 9 | 5.5 | 11.6 |
| Kentucky..... | 10.3 | 8.8 | 10.4 | 10.4 | 10.6 | 11.5 | 11.2 | 5.4 | 8.3 |
| Missouri..... | 10.6 | 8.1 | 10.9 | 9 | 8.7 | 8.5 | 8.5 | 8.5 | 9 |
| Illinois..... | 10.5 | 9.3 | 10 | 8.9 | 9.2 | 9.3 | 9 | 7.5 | 8 |
| Indiana..... | 10.6 | 8.5 | 10.4 | 9.1 | 8.9 | 10.2 | 10.4 | 8.2 | 13.1 |
| Ohio..... | 10.2 | 8.7 | 10.1 | 9.5 | 9.9 | 9.4 | 9.3 | 5.6 | 9.5 |
| Michigan..... | 10.5 | 9.3 | 10 | 8.5 | 9.7 | 6 | 5.9 | 6.3 | 10.6 |
| Wisconsin..... | 10.6 | 9.3 | 10.7 | 8.9 | 9.9 | 5.3 | 5.7 | 5.5 | 10.3 |
| Minnesota..... | 12 | 10.5 | 10.9 | 10.7 | 11.5 | 7 | 7.7 | 4.2 | 6.3 |
| Iowa..... | 10.3 | 10.1 | 10.6 | 9.5 | 10.2 | 6.7 | 7 | 6.4 | 8.5 |
| Kansas..... | 13.1 | 7.8 | 12.5 | 10.1 | 9.8 | ..... | ..... | 6 | 8.6 |
| Nebraska..... | 11.6 | 9.6 | 11 | 10 | 10.5 | ..... | ..... | 4.5 | 5.5 |
| California..... | 10 | 8.8 | 8.8 | 9.3 | 8.7 | ..... | ..... | 5.8 | 11.8 |
| Oregon..... | 10 | 9.8 | 10.6 | 10.1 | 12 | ..... | ..... | 4.8 | 7 |

Condition of the crops, &c.—Continued.

| States. | WOOL. | | COWS AND CALVES. | | APPLES. | | PEACHES. | | PEARS. | |
|---------------------|--|--|--|---|--------------------------------------|---------------------------------------|--------------------------------------|---------------------------------------|--------------------------------------|---------------------------------------|
| | How many hundredths of last year's wool clip remain in the county. | Date of annual shearing in the county. | Average condition of cows this spring. | Number of calves dropped compared with average of former years. | Average amount of bloom this spring. | Average condition of the crop June 1. | Average amount of bloom this spring. | Average condition of the crop June 1. | Average amount of bloom this spring. | Average condition of the crop June 1. |
| Maine..... | 4.2 | May 26 | 10.6 | 10.4 | 10.5 | 10.8 | ..... | ..... | 10.8 | 11 |
| New Hampshire..... | 8 | June 9 | 10.2 | 10.1 | 11.7 | 11.5 | 12.2 | 11.5 | 11.5 | 11 |
| Vermont..... | 15 | June 8 | 10.8 | 10.7 | 12.6 | 11.3 | ..... | ..... | 10.6 | 11.4 |
| Massachusetts..... | 7.6 | June 13 | 10.6 | 9.9 | 12.5 | 11.5 | 12 | 11.8 | 11.3 | 11.5 |
| Rhode Island..... | 21.6 | June 9 | 10.3 | 10 | 11.3 | 11.6 | 10.6 | 10.6 | 10 | 10.6 |
| Connecticut..... | 21.5 | June 5 | 10.7 | 10.7 | 14 | 11.7 | 10.5 | 10 | 11 | 9.7 |
| New York..... | 5.1 | June 11 | 10 | 10.2 | 12 | 11.3 | 11.6 | 10.6 | 10.3 | 10.1 |
| New Jersey..... | 8 | May 26 | 10.2 | 10.2 | 12.4 | 11.8 | 11.5 | 11.3 | 11.5 | 10.6 |
| Pennsylvania..... | 4.5 | May 20 | 10.5 | 10.3 | 10.8 | 10.6 | 10 | 10.2 | 9.1 | 9.8 |
| Delaware..... | 10 | May 28 | 9.5 | 11 | 11 | 8 | 12 | 6.0 | 11.5 | 7.5 |
| Maryland..... | 4.3 | May 18 | 9.9 | 9.7 | 10.8 | 10.9 | 11 | 10.4 | 10.7 | 9.6 |
| Virginia..... | 3.4 | May 19 | 10.3 | 10.3 | 12 | 11.5 | 10.6 | 10.1 | 10.5 | 9.9 |
| North Carolina..... | 5.7 | May 18 | 10.1 | 10.3 | 11.5 | 11.3 | 11 | 10.3 | 10.4 | 9.3 |
| South Carolina..... | 12 | May 3 | 9.5 | 9.6 | 11.5 | 11 | 9.1 | 6.7 | 8 | 9.5 |
| Georgia..... | 8 | May 2 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Florida..... | 17 | May 7 | 8 | 6.6 | ..... | ..... | 10 | 9.2 | ..... | ..... |
| Alabama..... | 12 | April 23 | 9.3 | 9.7 | 9.7 | 7.2 | 9.6 | 3 | 9.2 | 6.4 |
| Mississippi..... | 12 | Aug. 15 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Louisiana..... | 35 | April 23 | 10.3 | 10.2 | 9.2 | 7 | 7.7 | 3.1 | 9 | 6.2 |
| Texas..... | 5.3 | Sept. 10 | 10.1 | 10.4 | 9.7 | 9.3 | 9.6 | 4.2 | 10 | 8.2 |
| Arkansas..... | 11.5 | April 21 | 10.1 | 10.4 | 9.7 | 9.3 | 9.6 | 4.2 | 10 | 8.2 |
| Tennessee..... | 9.5 | April 17 | 11 | 10.2 | 7.5 | 8 | 8.5 | 1.7 | 7.3 | 2.7 |
| West Virginia..... | 2.7 | Oct. 15 | 10.2 | 9.9 | 7.3 | 6.2 | 7 | 2.5 | 7.7 | 5.2 |
| Kentucky..... | 1.7 | Sept. 15 | 10.2 | 10.3 | 10.4 | 9.4 | 8.5 | 7.1 | 9 | 7.5 |
| Missouri..... | 7.7 | May 2 | 10.2 | 10.2 | 9.1 | 9.3 | 8.7 | 9.7 | 8 | 8.9 |
| Illinois..... | 6.7 | May 12 | 10.4 | 10.2 | 11.5 | 10.7 | 11 | 10.9 | 10.2 | 10.2 |
| Indiana..... | 8.3 | May 8 | 10.4 | 10.1 | 8.8 | 5.3 | 9.6 | 5.1 | 9.4 | 4.6 |
| Ohio..... | 4.6 | April 30 | 10.1 | 9.8 | 10.5 | 8.2 | 11.5 | 10.1 | 9.4 | 7.4 |
| Michigan..... | 5.4 | May 21 | 10 | 8.3 | 7.8 | 9.1 | 9 | 8.4 | 8.2 | 8.2 |
| Wisconsin..... | 5.5 | May 19 | 10.2 | 10 | 10.2 | 9.5 | 9.4 | 9.1 | 8.6 | 8.2 |
| Minnesota..... | 14.6 | June 6 | 10.5 | 10.5 | 10.7 | 10.4 | 10.5 | 11.2 | 8.6 | 9.2 |
| Iowa..... | 5.4 | June 10 | 10 | 11 | 9.6 | 8.6 | ..... | ..... | 9.9 | 7.9 |
| Kansas..... | 8 | June 4 | 10.6 | 11.7 | 13.1 | 11.9 | ..... | ..... | ..... | ..... |
| Nebraska..... | 5.5 | June 2 | 10.7 | 10.4 | 8 | 11.2 | 10.6 | 9.4 | 7.6 | 7.6 |
| California..... | 1 | May 19 | 10.6 | 11.8 | 12.6 | 5.7 | 10.8 | 7.7 | 9.3 | 4.5 |
| Oregon..... | 1.6 | May 22 | 10.9 | 11.5 | 10.4 | 5.7 | 8.2 | 6.8 | 9.6 | 7 |
| | | April 17 | 10.6 | 10.3 | 10.8 | 10 | 9.8 | 8.8 | 10.4 | 9.2 |
| | | Sept. 21 | 11.5 | 10.1 | 8.7 | 9.8 | 9.6 | 9.8 | 9.2 | 9.6 |

WINTER GRAINS.

The following extracts, apart from the tables, do not give an average view of the condition of these crops, many of them being exceptional, descriptive of the local casualties of the season.

Norfolk County, Mass.—There is an increased breadth of winter wheat owing to a desire to experiment with the crop. The condition of all cereals is fully up to that of last year.

Livingston County, N. Y.—The spring was early, and vegetation is two weeks earlier than in any season for twenty years. Early-sown winter wheat is looking first-rate, but the dry weather is hard on the late-sown.

Rensselaer County, N. Y.—The dry, cold weather is affecting the grass

and pasture. Rye was winter-killed on wet land ; some of it was plowed up and sown to oats.

Eric County, N. Y.—Wheat looks poor and small. Winter wheat taller than last season at this date, but not so heavy on the ground. All crops suffering for rain.

Genesee County, N. Y.—Winter wheat was sown late in the mud, and looks small, and is in want of rain. Spring grains have not suffered much.

Niagara County, N. Y.—About twenty per cent. decrease of acreage of winter wheat, and it wintered badly, so that some fields have been plowed up ; spring grains were all sown in good time and are promising, but will need rain soon.

Saratoga County, N. Y.—Winter wheat is not as promising as usual, on account of the warm, dry weather.

Washington County, N. Y.—Winter grain has seldom looked worse at this season of the year. Have had little rain this spring.

Warren County, N. Y.—Winter wheat and rye injured by the ice. The ground is very dry, hence oats and pasture are poor.

Steuben County, N. Y.—Winter wheat does not look well ; many bare spots and the growth is thin. Spring crops unusually forward.

Monroe County, N. Y.—Very dry ; with rain soon grain and grass may be brought up to nearly an average, but at present the prospect is not encouraging.

Onondaga County, N. Y.—Winter wheat injured by winter-killing and suffering from drought. Vegetation earlier than usual ; wheat heads in May ; unless rain comes soon crops will fall short.

Mercer County, N. Y.—Winter wheat, as a general thing, is not promising. It did not come up well on account of dry weather at seeding time.

Burlington County, N. J.—The season has been unusually favorable for grass and for winter grain and oats, save on low ground. Two violent hail storms have passed through the county during the past month, destroying a great deal of fruit and grain, and some farmers have plowed up their wheat fields and planted corn.

Cumberland County, N. J.—Wheat has made an extraordinary growth.

Ocean County, N. J.—Great improvement in the rye and wheat since warm weather set in. Some fields look remarkably well ; others are jagged and irregular, especially the rye.

Hunterdon County, N. J.—Wheat and rye have much improved since March.

Adams County, Pa.—Owing to the favorable season thus far, the condition of winter wheat and rye has very much improved since the last report.

Dauphin County, Pa.—Owing to the wet weather, some of the best fields of wheat are going down, and are not likely to rise sufficiently to avoid injury.

Cambria County, Pa.—Winter grain poor ; much thrown out by the frost. Rye very good in some sections.

Bradford County, Pa.—Good prospect for winter wheat.

Armstrong County, Pa.—Wheat did not promise well in fall and winter, but the favorable spring has much improved the crop. Rye not promising.

Northumberland County, Pa.—In March and early April winter wheat and clover and grass were rather thin and unpromising, but the favorable spring has produced a favorable change, and an excellent harvest of grain and hay is promised.

Columbia County, Pa.—A severe hail storm on May 21 did much

damage to the crops. Some farmers who expected fair yields of wheat and rye will not get more than the seed sown; fine fields are being plowed up for other crops. The heads of bearded wheat have come out very much doubled up and crippled, and it is feared that they will not fill. Much of the wheat sown on low and spongy land is very poor, and in many places very much affected by the fly.

Perry County, Pa.—Wheat is a fair average, the favorable weather having materially improved the prospect. The wet weather may injure the crop.

Berks County, Pa.—Wheat much improved of late; but excessive rain has already caused much to lodge.

Indiana County, Pa.—There is no increase in the wheat acreage. The price is so low that it will not pay to raise wheat with hired labor; therefore, farmers have put in only what they can themselves handle.

Franklin County, Pa.—Grain excellent.

Queen Anne County, Md.—But little fallow was broken, and a limited amount of fertilizers used. Under the circumstances, wheat looks remarkably well, but the crop cannot exceed three-fourths of last year's crop.

Kent County, Md.—The dry fall of 1869 accounts for less fallow land plowed; hence, less wheat was seeded. The spring has been favorable for wheat.

Baltimore County, Md.—The wheat crop has recruited very much since last report. Rye is poor. The spring has been remarkably wet.

Montgomery County, Md.—More than the usual proportion of wheat was winter-killed, and the crop looked badly all winter, but it has improved rapidly since it began to grow in the spring. Some fields were injured by hail on the 10th of May.

Cecil County, Md.—Wheat was generally sown late, and was much injured in the latter part of the winter, yet the favorable spring has brought much of it above an average in condition. Where the land is low, however, the condition is considerably below an average.

Harford County, Md.—Wheat is growing very fast. Some fields are beginning to fall already, and may be materially injured if the rains continue.

Carroll County, Md.—Wheat and rye were never more flourishing.

Howard County, Md.—The wheat prospect is favorable.

Stafford County, Va.—Owing to the heavy rains, the wheat is not so good as expected.

Fauquier County, Va.—The wheat crop promises well, if not injured by the wet and the hot sun following.

Gloucester County, Va.—The excessive rains threaten serious disaster to wheat; already some farmers report the scab, and others complain of lodging on low grounds from overflow.

Spottsylvania County, Va.—The wheat crop is very promising, and the harvest will be at least five days earlier than for many years.

King George County, Va.—Wheat promises a plentiful yield, but is now in jeopardy from excessive rains. Rye promises well.

Amelia County, Va.—Wheat injured by heavy storm; much of it is flat upon the ground, but with bright sunshine most of it may rise again and make fair grain. The critical stage for wheat here is from the 8th to the 20th of June.

Buckingham County, Va.—The wheat crop looks well in the field, but the weather is wet and sultry, and the rust has already appeared in some fields.

Henrico County, Va.—Wheat materially damaged by recent heavy rains. No more than an average crop can now be expected.

Nelson County, Va.—Wheat, though put in roughly last fall, has improved rapidly, and promises much more than an average yield, if it can escape rust and storms; but for a week past, there have been frequent and heavy rains, with considerable wind, lodging much of the heavy wheat on bottom land, and the crop is, therefore, in a precarious condition, and can hardly escape the rust.

Albemarle County, Va.—The continued rain and wind have injured the wheat, and much of it is down.

Fairfax County, Va.—The winter was unfavorable for wheat, but the favorable spring has brought it up to an average. Drilled wheat is invariably better than that sown broadcast.

Chesterfield County, Va.—A very large acreage of winter wheat, and it is remarkably well filled, but the rust is apprehended, owing to the wet weather.

Smyth County, Va.—Wheat is heading, and is very fine.

Dinwiddie County, Va.—Wheat promises a larger crop than for three years past; the straw is long and the heads good.

Pulaski County, Va.—Wheat has improved very rapidly since the last report, and the crop is promising.

Amelia County, Va.—An increased wheat acreage in this county, despite adverse circumstances in the fall.

Stanly County, N. C.—Up to the 24th ultimo nothing could be more promising than the condition of the small grains, and good crops may yet be gathered despite the damp, rainy weather which has since set in. None of the usual disasters entailed on cereal crops by prolonged rainy weather have yet been perceived.

Davie County, N. C.—Rust is appearing on the wheat, which may ruin it.

Iredell County, N. C.—Wheat is more promising in this county than for a number of years.

Rockingham County, N. C.—If the present prospect be realized the wheat crop of this county will exceed last year's crop twenty-five to thirty per cent. The area sown is greater than ever before.

Franklin County, N. C.—The wheat crop, unusually promising up to the 26th ultimo, has been damaged by the severe storms; the extent is not yet known.

Guilford County, N. C.—The best prospect for winter wheat for several years.

Catawba County, N. C.—Never a better prospect for wheat.

Chowan County, N. C.—Wheat promises an abundant yield.

Alamance County, N. C.—The wheat crop promises well; if it fills well the yield will be twenty per cent. or more over that of last year. Heavy freshets have swept over a large area of wheat; the damage has not yet been ascertained.

Rutherford County, N. C.—Winter wheat promises better than for many years.

Lexington County, S. C.—The yield of wheat will certainly be above an average. The crop is out of danger of rust or smut.

Newbury County, S. C.—A drought of five weeks has injured wheat, reducing the crop one-third.

Richland County, S. C.—Wheat having a good growth was not much injured by the drought.

Spartanburg County, S. C.—Wheat is very promising, but the rains of the past few days cause apprehensions of rust.

Abbeville County, S. C.—The spring has been dry, which is favorable to the yield of wheat. The straw is short, but the heads are better filled than usual, and the crop is free from disease. It is now about ripe, and the rains have set in, and the crop may yet be injured seriously.

Greenville County, S. C.—May has been unusually dry, and it is feared that the grain crop will be light. The writer's Red Bearded Mediterranean and the Tappahannock look as fine as he ever saw them in Pennsylvania. He soaked the seed in salt and water, and dusted with lime before sowing, and top-dressed in winter with barn-yard manure.

York County, S. C.—Only half a crop of wheat can be expected, owing to the drought of seven weeks.

Lumpkin County, Ga.—Wheat and rye give promise of a very abundant harvest. The acreage in wheat is fully fifty per cent. greater than that of last year, and the yield will be fifty per cent. above last year, unless there be disaster in the next fortnight.

Clayton County, Ga.—Wheat generally promising—especially the Tappahannock, which bids fair to excel all other varieties grown here.

Chattanooga County, Ga.—Wheat on bottom land, although killed to some extent by cold, promises over an average crop; that on upland is below the average.

Murray County, Ga.—The season has been favorable for wheat.

Crawford County, Ga.—Wheat promising. The cold spring injured all crops but wheat.

Forsyth County, Ga.—Wheat is good, though injured somewhat by the seven weeks' drought.

Gordon County, Ga.—Wheat is extra good.

Pulaski County, Ga.—Wheat is excellent for this section. The Tappahannock wheat, received from the Department, is the best variety grown here.

Schley County, Ga.—Wheat crop much injured by birds—perhaps one-sixth destroyed.

Cave Spring, Ga.—Crops look well—wheat being harvested—a good yield.

Randolph County, Ala.—Wheat is in more than average condition.

Attala County, Miss.—Wheat is in good condition, but the acreage is only one-third that of former years.

Williamson County, Texas.—The raising of small grain has been nearly abandoned, and increased acreage of cotton has been substituted.

Bexar County, Texas.—The wheat harvest is nearly concluded. Although the acreage is less than that of last year, the quality of the crop is better, and the yield per acre is judged to be greater.

Red River County, Texas.—The spring has been remarkably cool, and wheat is ten days later than it was last year, but is very fine. The crop is one-tenth less than an average, owing to damage by rice birds.

Upshur County, Texas.—Spring wheat is in promising condition, and the acreage is about the same as last year. Winter wheat is in average condition, but continues to decline in acreage.

Grayson County, Texas.—The wheat crop was seriously injured April 10, by a severe hail-storm which traversed the county from east to west. Several good wheat fields were entirely destroyed, and the total loss will amount to 10,000 bushels.

Ellis County, Texas.—Wheat is now mostly cut and shocked; the harvest is much later than usual.

Independence County, Ark.—Wheat was planted in good season and with unusual care, but has given little promise. Harvest is at hand,

and there will certainly be less than half a crop. An unusual drought has prevailed for the last three months.

Sebastian County, Ark.—The spring has been unusually dry, and wheat (as well as rye and oats) has been cut short.

Yell County, Ark.—Winter wheat was injured by the cold, dry spring, but it has greatly improved under recent rains.

Meigs County, Tenn.—Wheat has looked finely, till within a very few days; but rust is making its appearance.

Polk County Tenn.—The probability is that there will be an excellent crop. Orleans and Tappahannock varieties will be ready to harvest June 5.

Henry County, Tenn.—The wheat crop will probably be about an average one.

Sevier County, Tenn.—The season has been favorable until the last week; but crops are now suffering from heavy rains, and it is feared that much damage will be done to cereals.

Hawkins County, Tenn.—Winter wheat generally presents a good stand, with abundant straw of good length; but the heads are forming very irregularly, and are mostly short; it is feared that the crop will be greatly damaged by the heavy rains which have fallen within the last ten days.

Monroe County, Tenn.—Winter wheat is looking finely, although recent heavy rains have caused considerable lodging.

Montgomery County, Tenn.—The wheat crop was never more promising than now; but there has been some damage by a recent heavy rain, especially in the valleys, where the wheat has been washed down by the storm.

Knox County, Tenn.—The prospect is very promising, and a large harvest is expected.

Clinton County, Ky.—Wheat is very promising.

Greenup County, Ky.—The drought has affected the growth of crops considerably, especially wheat.

Hardin County, Ky.—Wheat is injured by the fly, about two-tenths.

Henry County, Ky.—A sudden and unlooked for blight has fallen upon many of the wheat-fields of this county; appearances indicating the presence of the fly. It is feared that crops thus affected will be entirely cut off.

Laurel County, Ky.—Wheat and corn look well.

Livingston County, Ky.—Wheat has suffered much for want of rain.

McCracken County, Ky.—Wheat promises much better than it did six weeks ago, and more is sown than at first supposed.

Meade County, Ky.—The wheat crop so far is very promising, though the wheat was somewhat injured by wind and rain.

Oldham County, Ky.—Wheat stood the winter well. Not so much sown as usual.

Spencer County, Ky.—Wheat is affected by smut and rust. The crop will probably be inferior in quality, and short in quantity.

Trimble County, Ky.—Wheat looks very well, and if it escapes rust, there will be a fine yield.

Braxton County, W. Va.—Winter wheat at this date is very promising.

Brooke County, W. Va.—We have had a very wet winter and spring, on account of which winter wheat was greatly injured.

Harrison County, W. Va.—Wheat is looking well.

Hancock County, W. Va.—The spring has been unusually favorable to crops of all descriptions.

Jefferson County, W. Va.—Thus far the season has been a remarkably favorable one for all crops. Wheat, though in average condition, is not quite up to last season, when the crop was an exceptional one. Our Tappahannock wheat is about two weeks earlier than common bearded varieties.

Monroe County, W. Va.—Wheat looks very fine, and is very far advanced for the season.

Morgan County, W. Va.—The winter was uncommonly mild, and the spring has been the most favorable, to all sorts of crops, of any within my recollection.

Nicholas County, W. Va.—More wheat was sown than in any year since the war.

Preston County, W. Va.—Wheat, oats, corn, grass, and garden vegetables look well.

Butler County, Ohio.—Wheat has suffered great damage from drought.

Crawford County, Ohio.—Not more than a half a crop of wheat is expected.

Champaign County, Ohio.—Much of the wheat is heading out not over one foot high, and many acres will not be worth cutting.

Ashland County, Ohio.—There will be about an average crop of wheat.

Mercer County, Ohio.—Wheat was winter-killed to an alarming extent, and the present drought added makes the prospect very unfavorable.

St. Joseph County, Mich.—Wheat will suffer more than it has for years past, on account of the fly and the drought.

Montcalm County, Mich.—About one-third of the winter wheat is killed.

Washtenaw County, Mich.—The yield of wheat will not come up to that of the last two years,

Van Buren County, Mich.—Wheat is heading out in little short heads, ten to fifteen inches from the ground. Even good rains will not save it now or produce a good crop.

Antrim County, Mich.—Fall wheat is badly winter-killed, but is improving. Spring wheat looks well.

Macomb County, Mich.—Wheat was not sown in good season last fall, and the winter was unfavorable.

Brown County, Ind.—Wheat has headed out lower than usual; looked quite promising on the first of April; but on poor land it has not done well during the dry weather. On good land it looks well.

Floyd County, Ind.—Hail has done much damage to the wheat, and in some cases has totally destroyed the crop.

Hancock County, Ind.—As the season advances, the prospect for a good wheat crop improves.

Elkhart County, Ind.—Wheat promises well.

Randolph County, Ind.—The wheat crop will not average four-tenths.

Madison County, Ind.—Wheat will not average more than one-half a crop.

Johnson County, Ind.—Wheat is quite unpromising; thin on the ground and heading out very low. The ground on which it grows is as dry and hard as the highway.

Union County, Ind.—Farmers do not expect more than half a crop of wheat on account of injury by drought and grub-worms.

Noble County, Ind.—Wheat looks well.

Parke County, Ind.—The wheat crop will prove almost a total failure.

Martin County, Ind.—The drought has materially affected the prospect of a good wheat crop.

Kosciusko County, Ind.—Wheat is every day deteriorating on account of the drought.

Kankakee County, Ill.—Very little winter wheat sown.

St. Clair County, Ill.—The wheat crop is worse than for many years past; a great deal of it was plowed under, and the land put in corn.

Lake County, Ill.—The reduction of the price of wheat has caused many farmers to sow flax in its stead. More acres of flax have been sown this spring than of wheat.

Fayette County, Ill.—Wheat looks badly, but there will be a half crop or more.

Effingham County, Ill.—The fall wheat will not exceed half a crop; badly winter-killed.

Winnebago County, Ill.—Wheat is generally thin, on account of defective seed and dry weather.

Scott County, Ill.—Wheat will be short.

Greene County, Ill.—Wheat is heading out finely.

Mercer County, Ill.—Wheat will probably be a failure on account of the drought.

Madison County, Ill.—Wheat will probably be of first quality, but little, if any, above half an average in quantity.

Lawrence County, Ill.—Wheat heads are unusually large this season.

Williamson County, Ill.—The wheat crop will not equal in yield that of last year. The plants lack vigor.

Menard County, Ill.—Wheat has been seriously injured by the drought.

Boone County, Ill.—A decreased acreage of wheat.

Lee County, Ill.—Spring wheat has suffered seriously from drought.

Edgewood, Effingham County, Ill.—Wheat has come out a great deal, yet our yield cannot be half as large as last year's crop. There was less than half the acreage sown, and one-fourth of that amount has been plowed under and planted to spring grain. Late sowing and the severe winter weather were the causes.

Adair County, Mo.—Everything is suffering for rain.

Benton County, Mo.—The season is extraordinary—so very dry that at this date there is scarcely any hope of more than one-fourth of a crop of wheat.

Cass County, Mo.—Winter wheat is heading low.

Cole County, Mo.—We have had no rain to do any good through the month of May. Grain is heading out, and looking tolerably well where the ground was plowed deep and the grain drilled in; but if we miss our seasonable rains, we shall have empty ears in wheat, barley, and oats.

Dade County, Mo.—Wheat, oats, &c., were never so short.

Franklin County, Mo.—Wheat early sown will head well, with full grain; late sown is very unpromising.

Hickory County, Mo.—We have had the driest May that has been known in the last fifteen years. Wheat, oats, grass, &c., are cut short.

Lincoln County, Mo.—No wheat on the prairie; the dry weather of the past month has cut the crop short in the timber.

Mercer County, Mo.—Wheat and corn, and small grain generally, look very well, having the best season there has been for eight years.

Moniteau County, Mo.—Wheat badly winter killed.

Montgomery County, Mo.—Wheat is cut short, and oats much injured.

Osage County, Mo.—The wheat crop in this section will not average a full crop; possibly, not more than two-thirds. All that was sown on high land was winter-killed.

Polk County, Mo.—The drought is so severe that unless we have rain soon our wheat and other grain crops will be ruined.

Ray County, Mo.—Crops have suffered very much for want of rain.

Stone County, Mo.—There will not be half a crop of small grain, such as wheat and rye, on account of the dry weather in April and May.

Vernon County, Mo.—Great want of rain; all crops wilting in the sun.

Washington County, Mo.—Wheat, oats, and grass crops suffering now for want of rain, and will be cut short if it does not come soon.

Jefferson County, Wis.—The unusually dry weather, lasting through May, has much damaged the small grain crops.

Monroe County, Wis.—Wheat was materially injured by the heavy snow of last winter.

Pierce County, Wis.—Wheat looks well.

Tama County, Iowa.—Wheat does not look as well as usual; but little was sown before April 1.

Wabash County, Minn.—Wheat looks well, although a great deal of spring plowing had to be done, which is not favorable to good crops.

Carver County, Minn.—The wheat crop is especially promising.

Faribault County, Minn.—The wheat crop on fall plowing looks well, while that sown on spring plowing is generally thin and late.

Goodhue County, Minn.—A decline in the acreage of spring wheat is noted in this county, consequent in part upon the increased attention given to grazing.

Franklin County, Kansas.—A few weeks of dry weather have modified the prospect of a good wheat crop.

Shawnee County, Kansas.—Dry weather and a late frost have nearly destroyed the wheat crop.

Coffey County, Kansas.—The dry weather in May has somewhat diminished the prospect for a heavy return of small grains. The winter wheat has straw sufficient to make a good crop, but the spring wheat in addition to its very short straw is generally very thin on the ground, on account of a heavy frost in April.

Leavenworth County, Kansas.—Fall wheat is very promising.

Clay County, Kansas.—Wheat in the south half of the county has suffered severely by drought, in the north half it is much better.

Linn County, Kansas.—Wheat will be very short, but well headed.

Dakota County, Neb.—Wheat looks better than usual. There is plenty of rain.

San Bernardino County, Cal.—The cereals are nearly a total failure on account of lack of rain, and hot north winds.

Beaver County, Utah.—The decrease of average condition of spring wheat is owing to the ravages of grasshoppers, which threaten a much greater loss than is indicated in the table.

Juab County, Utah.—Fall wheat was subjected to alternate freezing and thawing, the result being that many of the wheat roots have been killed. The grasshoppers are using up the crops fearfully.

San Pete County, Utah.—About nine-tenths of the grain crops utterly destroyed by grasshoppers.

Stanislaus County, Cal.—The return of wheat for this county and for the whole State will not amount to over one-half that of last year. Since the 1st of May, the grasshoppers have been committing ravages on the late sown grain, and wholly destroyed the crop in several localities in the county.

COTTON.

New Hanover County, N. C.—The cotton crop is in fine condition and promising.

Duplin County, N. C.—The young cotton was much damaged on some plantations by a severe hail-storm; the stand was injured to such an extent in places as to require plowing up and replanting. The crop is generally in fine order and promising.

Mecklenburg County, N. C.—Early planted cotton has made a good stand and is doing well. The late planted cotton has poor stands—just coming up.

Franklin County, N. C.—Cotton has been planted extensively, to the neglect of corn. The cotton prospect is favorable, but the correspondent thinks it would be better for the farmers if they could be impressed with the importance of raising at least enough grain for the home demand.

Chowan County, N. C.—Cotton acreage increased fifty per cent.; good stand; condition favorable.

Edgecombe County, N. C.—Excellent stand of cotton; with increased acreage of six to ten per cent.

Pasquotank County, N. C.—Three times as much cotton has been planted in this county this year as in any year since the war.

Bertie County, N. C.—Cotton looks remarkably well, with general satisfaction with the stand; one-third more planted than last year.

Newbury County, S. C.—A good stand of cotton and the crop is promising.

Richland County, S. C.—The cotton prospect is good; much better than at this date last year. The early planted is growing beautifully, and the late planted is all up. No complaints of the stand within the last ten days.

Williamsburg County, S. C.—Three weeks without rain. Late planting of cotton not yet up. Where early stands were secured the plant is promising.

Barnwell County, S. C.—Cotton looks badly; not more than five-eighths of a stand.

Baldwin County, Ga.—Cotton looks well. Planters are engaged in "chopping out."

Hancock County, Ga.—Cotton stand is good, but late—showing every day. No rain from early in April to the 25th of May.

Jackson County, Ga.—A sorry stand of cotton, owing to the dry weather. A five weeks' drought just ended.

Macon County, Ga.—The drought has not seriously injured cotton, except in growth. It is about two weeks behind in size.

Morgan County, Ga.—Cotton crop never more promising.

Spaulding County, Ga.—Cotton is in much better condition than at same date last year. The stand is good and the crop is in good order.

Sumter County, Ga.—Owing to drought the cotton is small. The stand is poor, but that which is up looks very well.

Decatur County, Ga.—The cotton crop has been retarded by the dry weather, and the stand materially affected.

Schley County, Ga.—Cotton backward, owing to drought.

Bartow County, Ga.—Excellent stand of cotton and the plants growing vigorously.

Harris County, Ga.—The rain on the 26th ultimo brought up the cotton that had failed to come on before, of which there was considerable, and the prospect for a good crop has brightened.

Cave Spring, Ga.—Cotton crop promising; but too much planted. Corn growing beautifully—too little planted. Freedmen working well.

Jackson County, Fla.—Cotton is about two weeks behind its usual growth on account of the late spring. A drought of two or three weeks followed the sudden opening of summer; but rains have been pretty general within the last ten days and the crop is now looking well.

Sumter County, Ala.—Land of all kinds was badly prepared on account of late spring rains, and hence the prospect of cotton is poor, as compared with the condition of the crop at the same season last year, especially where planted very late on sandy land.

Dallas County, Ala.—Cotton is in average condition; the acreage is ten per cent. greater than it was last year.

Clarke County, Ala.—Cotton has a good stand, but is small, and at least two weeks later than it was at the corresponding season of last year. There has been but little rain during the greater part of May, and rain is now needed. March and April were unusually cool, and rains were abundant. The cotton acreage has increased.

Randolph County, Ala.—Cotton has a good stand and is looking well.

De Soto County, Miss.—Cotton is in good condition. This crop has largely increased in acreage and has absorbed almost the entire agricultural interest of the county.

Lauderdale County, Miss.—Cotton is very promising; the land is in better condition, and the stand is better than for many years past, and the work is more forward.

Attala County, Miss.—Cotton is the all-absorbing interest here. The crop is promising.

Grenada County, Miss.—Cotton has been retarded by drought in May, but has improved under late abundant rains, and now looks healthy, though small for this time of year. The culture has been poor, owing to defective labor.

Coahoma County, Miss.—The cotton prospect is good, and the acreage is ten per cent. greater than it was last year.

Sun Flower County, Miss.—Cotton is in excellent condition. Planting was done in April, nearly a month earlier than last year.

Holmes County, Miss.—Cotton looks well.

Winn Parish, La.—Cotton promises better than it has done during the last ten years at the same season, and there is at least two per cent. increase over the acreage of 1869.

Rapides Parish, La.—Cotton is in fine condition and the acreage is considerably larger than that of last year.

Carroll Parish, La.—The prospect is good notwithstanding a wet winter and spring.

Tensas Parish, La.—Cotton is twenty per cent. above an average in condition, and the acreage is one-fifth larger than it was last year.

Williamson County, Texas.—Cotton promises more than an average crop.

Cameron County, Texas.—Cotton planted in February is now opening; that planted later needs rain, and unless this want is soon supplied will probably be ruined. The cotton acreage is ten times what it was last year.

Rusk County, Texas.—Cotton promises an average crop.

Leon County, Texas.—Cotton is in excellent condition, considering the backward spring.

Falls County, Texas.—Cotton is in very good condition, and the acreage is one-fifth larger than that of last year.

Austin County, Texas.—Cotton is in good condition.

Gonzales County, Texas.—Cotton is in average condition, and the acreage is fifty per cent. larger than usual.

Matagorda County, Texas.—Cotton is yet small, but is in healthy condition.

Anderson County, Texas.—Notwithstanding an unusually mild winter, the crops are fully twenty days later than usual, owing to the demoralized state of labor, but are promising in proportion to the care and labor given. The cotton of this county of last year is mostly unsold as yet, on account of the downward tendency of price. This decline seems to have arisen from the opinion prevalent in commercial classes that the crop of 1869 will exceed 3,000,000 bales.

Blanco County, Texas.—Stock raisers have sold all their stock, to be driven to Kansas and California, reserving only a few for home consumption, and have turned their attention to farming. They have put into cultivation one thousand acres of new land and have planted about eight hundred acres in cotton, with the prospect of an average crop.

Galveston County, Texas.—I have seventy-five acres in Sea Island cotton—thirty acres more than last year. Plants small and backward, owing to late planting and want of rain. Stand only moderate. Crop will be light unless we have rain soon. Short staple cotton sparsely planted in this county.

Independence County, Ark.—Cotton was planted about twenty days earlier than usual, and is now very promising.

Arkansas County, Ark.—The cotton crop greatly predominates, and its acreage is larger this year than it was last year. Cotton never looked better than now, but it is suffering to some extent from scarcity of labor.

Phillips County, Ark.—Cotton promising. Larger acreage than last year.

Sebastian County, Ark.—Cotton is doing well. If rain should fall soon, the product will be one-third larger than in any previous year.

Union County, Ark.—Cotton never looked better. Less cotton and more corn has been planted this year than in 1869.

Weakley County, Tenn.—The spring has been remarkably dry and cool, and cotton is very late, some of the growth dying out.

Giles County, Tenn.—There is less cotton planted than in any year from the close of the war up to the present season, and the crop is being better worked.

CORN.

Essex County, Vt.—The corn crop looks well and covers double the area of last year.

Grand Isle County, Vt.—Corn is coming up badly on account of the drought.

Seneca County, N. Y.—Corn not all planted yet, and not sufficient moisture in the ground to start vegetation.

Cumberland County, N. J.—Corn generally planted in good order and came up well, but there has been so much wet weather that the plants look yellow and need sunshine.

Franklin County, Pa.—Corn planted late, on account of rains.

Dauphin County, Pa.—Corn is backward and overrun with weeds, which it is impossible to subdue, on account of constant rain.

Lawrence County, Pa.—Corn is growing well, although a great deal has been washed out by heavy rains.

Bradford County, Pa.—Farmers in the midst of corn planting; the weather a little cool.

Beaver County, Pa.—Corn was planted ten to twenty days earlier than for the past three years, and farmers have commenced to work it.

Kent County, Md.—The season has been rather wet for corn. Oats are flourishing.

Cecil County, Md.—Corn was generally planted late.

Harford County, Md.—Owing to the wet weather fully one-fourth of the corn is yet to be planted; and even when up and growing it is suffering for working, and farmers fear that working corn lands and the harvest will be upon them at the same time.

Carroll County, Md.—The early planting of corn is coming up well. The greater portion of the corn has been put in late.

Howard County, Md.—The corn greatly needs working, being overgrown with weeds.

Spottsylvania County, Va.—A largely-increased breadth of corn has been planted in this county.

King George County, Va.—Corn planted in good time and full quantity, but rain prevents cultivation. Dry weather needed.

Princess Anne County, Va.—Corn stands well and is now ready for hoeing.

Smyth County, Va.—A large area of corn is planted and a good crop is promised.

Pulaski County, Va.—Corn, though planted late, is quite promising. Oats and grass need more rain.

Amelia County, Va.—There is a larger area planted in corn than usual.

New Hanover County, N. C.—The corn crop is very promising, insects being less destructive than usual, owing to the wet spring.

Duplin County, N. C.—Wheat seriously damaged on some plantations by hail.

Davie County, N. C.—Corn very promising.

Mecklenburg County, N. C.—Early corn a poor stand; late planted is better.

Chowan County, N. C.—Corn crop promising.

Edgecomb County, N. C.—The corn stand is excellent, and the prospect of crop good, though the acreage is less than usual.

Pasquotank County, N. C.—Twice as much corn planted in this county this year as in any year since the war.

Bertie County, N. C.—Corn is small for the season.

Richland County, S. C.—Corn which was planted early suffered little from the drought, but that planted late could not get moisture enough to sprout until within the last ten days.

Williamsburg County, S. C.—Corn is good and doing well.

Newberry County, S. C.—Favorable weather since May 20, has improved spring crops very much, and good stands of corn have been secured, and the crop is promising.

Baldwin County, Ga.—Corn looks remarkably well; two to three feet high. More planted than last year.

Macon County, Ga.—Corn two weeks behind in size; not otherwise injured by the drought.

Morgan County, Ga.—The corn crop was never more promising.

Spaulding County, Ga.—Corn is in promising condition.

Decatur County, Ga.—The dry weather has materially affected the stand of corn.

Bartow County, Ga.—Stand of corn excellent; well worked to date.

Harris County, Ga.—The drought did not seriously injure the corn crop.

Manatee County, Fla.—Corn is looking well.

Sumter County, Ala.—Corn is not doing as well, on account of late spring rains preventing a proper preparation of ground. Corn is doing better on sandy land than on prairie soil. Rain is now needed.

Dallas County, Ala.—Corn is in average condition; the acreage is twenty per cent. less than in 1869, while the cotton acreage has increased.

Clarke County, Ala.—Corn is two weeks later than it was last year, and the acreage is smaller, while that of cotton is increased.

Randolph County, Ala.—As a general thing the stand is poor, but since the rain of May 25, corn has grown remarkably. The spring was cold, dry, and late. No rain from March 29 to May 25.

De Soto County, Miss.—A smaller acreage than usual. Corn sells readily at \$1 40 per bushel.

Attala County, Miss.—The growing crop is in good condition. Cotton, however, is the absorbing interest here, and the consequence is that corn is now worth \$2 per bushel, and bacon 25 cents per pound.

Coahoma County, Miss.—Corn is looking well, and the acreage is about the same as that of last year.

Sun Flower County, Miss.—Corn is in excellent condition.

Holmes County, Miss.—The finest corn season known for years.

Winn Parish, La.—The prospect of the corn crop is better than it has been for the last ten years at the same season, and the acreage is two per cent. greater than that of 1869.

Rapides Parish, La.—The corn crop is above the average of the last two years.

St Mary's Parish, La.—Corn is raised rather to prepare the ground for cane than for direct profit. The crop is an average in condition and acreage.

Carroll Parish, La.—The prospect is good.

Williamson County, Texas.—There is prospect of more than an average crop.

Cameron County, Texas.—Corn planted before February 15 is in average condition; that planted since is suffering from drought.

Rusk County, Texas.—Corn promises an average crop, and the acreage is about equal to that of cotton.

Leon County, Texas.—Corn is in good condition.

Austin County, Texas.—Corn has been somewhat injured by a drought of three weeks' duration.

Matagorda County, Texas.—Corn is backward for want of rain.

Independence County, Ark.—Corn is suffering from drought.

Phillips County, Ark.—Corn looks well. The acreage of corn has diminished, while that of cotton has increased.

Sebastian County, Ark.—Corn promising, notwithstanding the drought, and if rain falls soon the total product will be one-third larger than in any previous year.

Union County, Ark.—Corn and its acreage is increased, while that of cotton is diminished.

Hickman County, Tenn.—Corn looks well, and the acreage is larger than it was last year. Corn is now worth \$1 per bushel, and the supply by no means equal to the demand. The usual price here is 50 to 60 cents.

Monroe County, Tenn.—Corn looks well, although badly infested with weeds.

Greene County, Tenn.—Much of the crop came up badly; the cause consisting in peculiarities of temperature, and the condition of the ground. Corn is now very scarce, and the price higher than that of wheat.

Logan County, Ohio.—A larger acreage than usual has been given to corn. It looks well.

Franklin County, Ohio.—Corn in many instances has sprouted and then died in the ground; still there is plenty of time for a good crop.

Miami County, Ohio.—Corn stands well, but rain is needed.

Darke County, Ohio.—It has been somewhat difficult to get a good stand of corn on account of the drought.

Ashland County, Ohio.—The acreage of corn is very large, and the crop in unusually fine condition.

Pickaway County, Ohio.—Cut-worms and wire-worms have been very bad in the corn; some large fields will have to be planted again.

Greene County, Ohio.—Corn will be short in this county.

Lucas County, Ohio.—Corn late and not very good.

Highland County, Ohio.—Corn will be injured by cut-worms to greater extent than ever before.

Montgomery County, Ohio.—Many fields intended for corn remain unplanted on account of the continued drought.

Lorain County, Ohio.—Corn will be short.

Gallatin County, Ill.—The spring thus far has been more than usually favorable for corn. An increased acreage will be planted.

De Kalb County, Ill.—Probably one-third more corn has been planted this year than last. There is a good prospect of an abundant yield.

McDonough County, Ill.—Corn promises well.

St. Clair County, Ill.—The season has been very favorable for corn.

Lake County, Ill.—Corn comes up unevenly, much of the seed remaining as dry as when planted three weeks ago.

Bureau County, Ill.—Corn, in many instances, remains dry in the hills where planted, without sprouting.

Warren County, Ill.—The prospect for a large corn crop is more favorable than for many years.

Scott County, Ill.—A large acreage of corn was planted this year. It looks well.

Sangamon County, Ill.—The season has been remarkably favorable for corn-planting. A wider breadth planted than ever before.

Richland County, Ill.—Corn is suffering much from drought.

Hancock County, Ill.—Corn does not come up evenly, but the prospect is not altogether discouraging.

Edgewood, Effingham County, Ill.—There is a larger acreage of corn and oats than ever before, with crops doing well.

Lawrence County, Ill.—Corn suffered greatly during the month of May on account of drought.

Livingston County, Ill.—Corn is doing well.

Kendall County, Ill.—Corn is very even and clean.

Pike County, Ill.—Corn was injured by cold weather.

Knox County, Ill.—The corn prospect was never better at this season.

Elkhart County, Ind.—Corn looks well.

Wayne County, Ind.—Corn not half up.

Madison County, Ind.—Corn is coming up badly.

Johnson County, Ind.—Corn does not stand well.

Whitley County, Ind.—Corn comes up poorly.

Warren County, Ind.—Corn is doing well.

Ripley County, Ind.—Corn has come up poorly.

Pike County, Ind.—Corn is not coming up well.

Marion County, Ind.—Corn as yet less injured than other crops.

Jasper County, Ind.—Corn looks well, and is two weeks earlier than usual.

Greene County, Ind.—The corn planted has not come up, and must be planted over. The driest May ever known.

Cass County, Ind.—Corn is suffering for want of rain.

Steuben County, Ind.—A larger breadth of corn planted than in former years.

St. Joseph County, Ind.—Late planted corn will be a failure unless there is rain soon.

Clay County, Kansas.—Corn planted with hand machines has generally come up. That planted with the hoe fails badly.

Coffey County, Kansas.—Corn came up very unevenly, but looks fine and clean.

Doniphan County, Kansas.—The prospect of a good corn crop is even better than last year.

Leavenworth County, Kansas.—Corn looks remarkably well.

Cuming County, Neb.—Corn rotted badly. Spring cold and backward.

Dakota County, Neb.—In many instances farmers have been compelled to replant corn on account of ravages of the cut-worm.

Merrick County, Neb.—The season is rather late, but corn-planting is not over. A great deal is being planted.

Fillmore County, Minn.—Corn is in fair condition, and double the usual amount of land is planted.

Lee County, Iowa.—There is a largely-increased acreage of corn, in the best condition.

Pocahontas County, Iowa.—Crops generally are in good condition, and about the average amount of corn is planted.

Story County, Iowa.—Prospect of a large crop of corn never better. The finest season in Central Iowa since 1861.

Washington County, Iowa.—A large breadth of corn planted, and the season a month in advance of the last.

Levis County Mo.—Nearly double the usual amount of corn has been planted, but its condition is not very good.

Green County, Wis.—Corn that was planted early in May looks finely.

Crawford County, Wis.—Corn looks well, but stands thin owing to poor seed.

EXTRACTS FROM CORRESPONDENCE.

WHEAT IN OHIO.

The president of the Ohio Board of Agriculture, James W. Ross, writes from Perrysburg as follows:

Wood County, Ohio.—I returned home last evening from a trip through the southern, southwestern, and western counties of this State, and find all portions suffering severely from excessive drought. The months of April and May have been, with us, the driest, or with less rain, than any corresponding months for 20 years. All of our crops are suffering for want of rain, the late sown oats, in particular, are almost past reclamation, and will be very light. I find that the general condition of the wheat crop in all the portions of the State visited by me is about the same. That which was sown on heavy clay soil is badly winter-killed; that sown on sandy and gravel sub-soil land is looking tolerably well, but will not be an average crop. The westerly half of the State will not, taking it all together, average over one-third per acre the amount produced last season. Meadows are short and light; pastures are burn-

ing out badly, and the late planted corn is not coming up well, there not being moisture enough in the ground to germinate it, excepting in a few low places.

STEAM CULTURE IN LOUISIANA.

Washington, D. C.—I left Washington City the 21st of May for a trip southward, and found the cotton crop coming up, and both it and the corn crop looking well. Knowing the great interest you feel in steam cultivation, on my arrival at New Orleans I determined to visit Magnolia sugar plantation, owned by Mr. Lawrence, the pioneer of steam plowing in the United States. His crop of cane and corn, about 1,000 acres in one field, had been planted on land plowed and cultivated wholly with the steam plow. Not one drop of rain had fallen for more than six weeks, and the crops on the various plantations passed, though green, were quite small, from excessive drought. I was surprised when I got to Magnolia to find the cane and corn looking dark and exceedingly thrifty, and I am free to say it is the most splendid-looking crop of cane and corn I saw in the State. The dry weather had not affected the growth of the crops, which were in a forward and flourishing condition. The crop was nearly all laid by, and it had been worked by about half of the usual number of hands. I was shown a few acres of three-year-old ratoon canes that had been deeply sub-soiled with the steam plow, apparently as good as any cane in the field. Mr. L. is very sanguine that the cane crop can be made, with steam cultivation, with one-third less mules, one-third less laborers, and will give one-third more yield per acre than under the old system.

OSAGE ORANGE FOR THE SILK-WORM.

Utah County, Utah.—Having been engaged in silk culture for three years past, I take the liberty of submitting to you a report of what I have done.

In 1867 the Hon. Albert K. Thurber, of this place, on his return from a visit to London, England, presented me with a few silk-worm eggs of the old French variety. They made sixteen cocoons, producing three female moths. The following year I raised five hundred worms, but not having sufficient mulberry leaves to feed them, I fed part of them on Osage orange; they ate it with avidity, all did well, and made cocoons of good size and color. Last season (1869) I fed five thousand worms on Osage orange, and they made five thousand cocoons. This season I am feeding ten thousand worms on Osage orange and they are doing well. I would here remark that I have never found a diseased worm since I commenced raising silk.

I have fed a portion of my worms each season on mulberry and a portion on Osage orange, and those fed on the latter have thrived and done as well as those fed on the former. I do not suppose Osage orange is preferable to mulberry to feed silk-worms, but it may be of importance to some to know that they will do well upon it. I have fed worms on the two kinds of feed in close proximity, and have known them to leave the mulberry and go to the Osage orange. The dryness of our climate, and the absence of thunder-storms during the feeding season render Utah particularly adapted to the raising of silk, and perhaps may be more favorable for feeding Osage orange than a moist climate.

Not having sufficient knowledge of the quality of silk to test it, I sent some cocoons to Mr. Muller, of Nevada City, California, to be reeled and

tested, and he reports that the silk is, to all appearances, strong and of excellent quality. I intend to make a business of silk culture as fast as circumstances will permit.

[Professor Glover, of this Department, four years since fed the silkworm (*Bombyx mori*) with the Osage orange with success corresponding with the foregoing experiment.]

HOPS IN ALABAMA.

Sumter County, Alabama.—Dr. E. H. Sholl, of this county, states that in February, 1868, he and Mr. E. Kring planted one and a half acre in hops, manuring liberally with home-made superphosphate. The vines grew vigorously, and were poled May 8. At date of June 3, some of the hops were fully matured, and the entire crop was gathered by July 20. In January, 1869, seven and a half acres were set out, and there was promise of a large yield, but owing to the impossibility of procuring pickers at the proper time, the enterprise was necessarily abandoned. Dr. S. is satisfied that, with a proper supply of labor, hops can be raised here very successfully, with a yield of fourteen hundred to eighteen hundred pounds per acre, and that the product can be put on the market from the 1st to the 10th of August, the crop being thus made especially valuable by early availability. Good cotton land—in other words, a light sandy loam with clay subsoil—is our best hop land.

CLOVER IN MISSISSIPPI.

Wilkinson County, Miss.—On land deeply plowed and well prepared, red clover does well here, although in much the greater part of the county there is too little lime in the soil. Yellow clover succeeds finely in every locality in which I have seen it tried, furnishing a great amount of nutritious grazing during winter and spring, being very luxuriant from March to May inclusive, when pasture is most needed here. Even this species is grown here to a very limited extent, however.

SALT UPON CORN.

Clinton County, Penn.—I have tried salt upon my corn mixed with Nova Scotia plaster, at the rate of one bushel to three of plaster, with very favorable results, but have never tested it by measuring the ground or the grain and comparing with other ground not salted. The mixture was applied at the ratio of one bushel to the acre.

SORGHUM IN PREBLE COUNTY, OHIO.

Preble County, Ohio.—Sorghum is a success here—for molasses—and I take pleasure in stating that the molasses improves with age; some placed upon the table lately was as clear as the finest strained honey, and free from any of that peculiar rank taste that renders sorghum so unpalatable to many persons; it was made five years ago and then of about average value.

TOBACCO AND BROOM CORN IN BUTLER COUNTY, OHIO.

Butler County, Ohio.—Our farmers are paying more attention to the culture of tobacco and broom corn; for the latter a ready sale can be

had at "home." An acre of good ground will produce about one thousand pounds of brown corn, valued at about \$300 to \$350 per ton.

THE SANDOMIRKA WHEAT IN VERMONT.

Windsor County, Vt.—About three years ago I received from you a package of the Sandomirka wheat, which was first sown in the fall of 1867, and the third crop is now on the ground. It has stood three severe "Vermont winters" without being in the least winter-killed, nor has it suffered from rust, smut, or the weevil. The yield has been equal to that of the best varieties raised here.

CHEESE FACTORIES IN MASSACHUSETTS.

Franklin County, Mass.—More than half of the fine wool sheep have been disposed of within the past two years, and the stock of South-downs has increased. More attention is being given to butter and cheese. Four cheese factories have been built within two years.

VAN WERT COUNTY, OHIO.

Van Wert County, Ohio.—The timber interest of this county is rapidly growing, and the black swamp region, on the rim of which we are, is commencing to reap a rich reward from timbers heretofore considered worthless. I am safe in saying that two hundred to three hundred cords of elm, bass, cotton, sycamore, and that class of timber, is daily used by the stave factories of this county, and factories are rapidly increasing in numbers and capacity. Their manufactured stock finds a ready market at Baltimore, Philadelphia, St. Louis, and intermediate points. A large business is also being done here in the more valuable timbers, such as walnut, oak, hickory, ash, &c.

Drainage is beginning to attract a great deal of attention; all streams are being cleaned out; many straightened and deepened. There is a great deal of open ditching, and now our farmers are commencing to lay tile and other underground ditches. Tile factories are springing up rapidly, and, with our rich and deep soil thoroughly drained and our crops accessible to excellent markets, this part of Ohio should become one of the most productive parts of this great State. The first cheese factory has just been started in this county; steam power is used, and the prospects of success are good.

RESOURCES OF UTAH TERRITORY.

Salt Lake, Utah.—After investigating the agricultural resources of this Territory I am free to say that I have been more than agreeably disappointed. I had supposed that it was scarcely less than a barren waste. I now believe that it is among the finest agricultural and pastoral regions of all the Territories. Of course we must irrigate in most localities, but it has been demonstrated that by planting trees and cultivating the soil, the rain-fall increases every year, requiring constantly less irrigation. I am disposed to think that if there was an abundance of water in all parts of the Territory and so situated that land could be irrigated at the same expense that land is now irrigated, I would prefer it to the rains and seasons of Illinois. Where proper irrigation can be had, double the amount of all kinds of grain and vegetables can be raised here that can be raised in Illinois. As we have not got the water

in all parts of the Territory we must resort to tree planting in the hope that it will remedy the evil.

As for the mineral resources of the Territory I honestly believe we are the richest of all the Territories—richer than all the States, possibly excepting California. You must bear in mind that mining here is in its infancy. Effort has been made to prevent the development of our mineral wealth for fear there would be a rush of Gentile emigrants, but that day has passed, and hundreds of miners from surrounding Territories are flocking in. Hundreds of tons of ore are being shipped from here to San Francisco to be smelted, which, after paying all expenses, nets the miner \$30 to \$50 per ton, showing clearly the extreme richness of the ores.

THE CLIMATE AND THE CAPABILITIES OF ARIZONA.

Pah Ute County, Arizona.—A rain-gauge is scarcely needed here, as it never rains. I should judge that the past year has not afforded us over one and a half inches of rain, and this is much the same in every season. Snow is out of the question. The past winter has been rather cold; thermometer descending to 18°, (above zero,) one degree lower than observed before. Spring is very backward, at date; frost has not entirely ceased, though the mercury rises to 70° in the shade in daytime. The climate is subject to great extremes; the highest heat I have known here was 118° in the shade, 155° in the sunshine. The country is arid and sterile, depending on irrigation for any crop. The valley land, with irrigation, will yield an average of twenty-five bushels of wheat per acre, often less, and sometimes as much as sixty; cotton, from four hundred to one thousand pounds lint. Of trees, the fig and pomegranate alone seem to thrive well. Grapes are super-excellent—all the best grapes of Europe flourish here to perfection; and there is no region known to me on the globe that will excel this for the vine. I have, individually, the best collection of European grapes found in a wide region around, which enables me to speak advisedly on the subject. We shall produce here this season a small quantity of as good raisins as the world affords, and expect to see the time shortly when we can send to the eastern States this great culinary luxury unsurpassed, and of American production, asking no odds of Malaga or Cadiz for quality.

TEXAS CATTLE.

Gonzales County, Texas.—It is estimated that twenty thousand beeves have already left this county this spring for the northern market, via Kansas. The average home price for beeves prior to the war was \$15; now it is \$10. Stock men complain that, while consumers are paying more for their beef, they are receiving thirty-three and one-third per cent. less, the residue going into the hand of speculators. They attribute this fact to two causes, to wit: "First. A combination between a firm in New Orleans, whose names I do not know, and their confrères in this State. By said combination the Texan firm monopolizes the purchasing for the New Orleans market, and the New Orleans parties monopolize the carrying trade of the Gulf of Mexico, and the sales in that city, fix the price they pay, and also the price they receive. Second. By enactments of the different States and the Indian Territory, through which the beeves must be driven, the driving of Texas cattle is either prohibited, or so heavily taxed as to make the expense of getting to market, in the North, enormously high. This action on the part of said States has done more

to embitter Texas against the United States government than almost any other one cause. They read in the Constitution a clause providing for free trade between the States, and then ask, 'What are the guarantees of the Constitution worth to Texas?' I have asked them why they did not apply to the courts for redress. The invariable reply is that the amount of two or three dollars on a beef will hardly justify a suit against so many parties, to wit: each of the Indian tribes, and each of the States through which they have to pass; and, say they, 'if we sue them, it is in courts and before juries of their own section, and what hope can we have of obtaining justice?' As to the cry of disease produced in the North by Texas cattle, no sane man in the State believes but what it is a hoax to prevent Texas beef from competing with Western beef. How can a sound and perfectly healthy animal produce disease in another in the same condition? During fifteen years' residence in this county I have not known a score of deaths from disease among cattle."

Williamson County, Texas.—Large droves of beeves are on their way to Kansas and a Northern market. It is estimated that at least fifteen thousand head have left this county this spring, and there are five thousand more to leave in the fall, making twenty thousand in all. Stock of all kinds looks extremely well.

MINNESOTA BEEF.

Wabasha County, Minn.—There has never, since the settlement of our county, been any prevailing disease among cattle. It is a noticeable fact that almost every beef slaughtered here is in every respect perfectly healthy. This fact is worth the notice of lovers of wholesome beef, and our beef ought to bring a better price in market than beef raised where cattle are subject to a complication of diseases.

STOCK HOGS.

Edgewood, Effingham County, Ill.—From all I can learn, there are ten stock hogs in this portion of the State where there was one last year. Everybody appears to have the pork mania, and pork will sell for less than \$5 per hundred within less than twelve months.

COARSE WOOL *vs.* FINE WOOL SHEEP.

Mahoning County, Ohio.—The farmers in this county are importing from Canada and foreign countries large numbers of Leicester and Cotswold breeds, and are selling off their fine wool sheep. This change from fine to coarse wool has been gradually going on for two or three years. A lot of two hundred Cotswold, Leicester, &c., were recently sold for the Philadelphia market, said to be the best ever taken from this part of Ohio. Average weight, two hundred and one and one-half pounds; sold at 10 cents per pound.

DOGS *vs.* SHEEP.

Cave Spring, Ga.—I have noticed in your monthly, as well as annual reports, the great destruction of sheep by dogs, and your appeal to Congress to levy a tax upon dogs in protection to sheep raising. Our State legislatures have also been appealed to, but as your correspondent from Lincoln, Kentucky, remarks "they have turned a deaf ear to our appeal." If Congress does not take the matter in hand and protect the

country, sheep must become very scarce. There is no country better adapted to sheep raising than northern Georgia, and our farmers would gladly have their flocks, were it not for the dogs; but so long as the country is overrun by dogs, sheep-raising is impossible. A neighbor, not long since, counted fifty-two dogs in one mile square; of course some were overlooked, and not ten of that number are of any value. Since the negroes have been freed, a gun and dogs have been the height of their ambition; hence, it is not unfrequently they are seen passing along, with gun on shoulder, with three to four half-starved dogs at their heels; and, what is still more strange, among the whites, the poorer they are in circumstances, and where they have to struggle the hardest to feed their families, you will see as many as four to five curs in their yards; and, when we consider the scarcity and high prices of provisions in the country, the astonishment is, how they can afford to feed so many surplus dogs. Reduce the dogs by taxation, and sheep would rapidly increase; the country would be vastly benefited by a tax on dogs; allowing one dog to each farm free, but rather than to miss, make no discrimination, but tax all \$3 a head. We trust that Congress will protect sheep-raising.

Troup County, Ga.—We must have a stringent dog law for the protection of the wool grower, or that interest will go down entirely.

Hall County, Ga.—The dogs are allowed to run at large, and on their account sheep cannot be raised. But for dogs, thousands of sheep would be raised here every year. Cannot Congress pass needful laws to compel men to keep dogs on their own inclosures?

Smith County, Va.—There are comparatively few sheep raised in this county, flocks averaging from ten to fifty, and few of the latter, and yet it is probably one of the best sheep-raising counties in the United States but for the villainous dogs. No one makes sheep-raising a business, only to supply his own demands, with, in some instances, a small surplus. Stock, as horses, mules, cattle, cows, &c., is constantly increasing, both in quantity and quality. We have many fine Durhams, and the farmers generally exhibit a laudable enterprise in improving their stock.

Franklin County, Ga.—Sheep raised in this county only for home consumption. The dogs and negroes kill them.

Wilkinson County, Miss.—Loss of sheep mostly by dogs. Lambs killed by dogs, hogs, wildcats, buzzards, (*Cathartes aura*,) and carrion crows, (*C. atrata*.)

Austin, Texas.—Owing to heavy losses caused by dogs, wolves, and disease, and to the fact that almost every flock is infected with scab, many sheep-raisers have become discouraged and there are only a few flocks left.

Fayette County, Tenn.—The almost universal reply, when questioned as to your flock of sheep to the farmers and planters of this country, "*All killed by dogs.*" I have lost all interest in this branch of husbandry." A few flocks are strictly watched and penned at night to furnish a few lambs in the spring. If a dog law could be enacted by the legislature, a new and enlarged interest would be exhibited in this Department; but it is the sheerest folly to undertake it when *nearly* every plantation can furnish a pack of *base-born curs*.

Putnam County, Mo.—The ravages of dogs among sheep continue as bad as ever.

Taney County, Mo.—Dogs and wolves make sad havoc among our sheep.

Sacramento County, Cal.—The wool crop was never better, and the

sheep are remarkably healthy. Eighty to ninety per cent. of lambs have been raised this season. The great enemy to wool and sheep-raisers is the large number of dogs that infest this State. They are a great nuisance, and destroy more sheep than all other casualties combined—wild animals included. If a national tax of \$2 on male, and \$5 on female dogs was collected, it would give great relief to the sheep-raiser, and prove a blessing to the wool interests generally of this State, besides reducing an intolerable nuisance. This is the general complaint of all owners of sheep.

Sacramento County, Cal.—Urge upon Congress the necessity of having a national tax upon dogs. "*Beware of dogs*;" let us rid the country of them, or if people will indulge in *canine* luxuries, let them pay for it.

MORTALITY AMONG SHEEP.

Williams County, Ohio.—Since last report some flocks of sheep have been decimated by disease, principally grub in the head. One of my neighbors lost seventy out of a flock of about two hundred; another, with a flock of seventy-five, lost all but eleven; other flocks are in good condition.

Pocahontas County, W. Va.—The mortality among sheep has been very great during the spring in consequence of the unfavorable weather and former neglect. Consequently the loss of lambs is very heavy.

Bourbon County, Ky.—I have heard of no disease among sheep in this county; a very few have been killed by dogs; I think three for each one hundred in the county would probably more than cover the loss. The loss of lambs results from inclement weather, as it is not the custom to shelter or house our sheep.

Adair County, Mo.—Fifteen out of each hundred sheep in this county have died of the scab and other diseases. Five per cent. of the lambs have also died. These are low estimates.

Bates County, Mo.—A flock which, at the time of my last report, comprised one thousand three hundred and fifty fine-wool sheep, have all died but twenty of the scab.

Tuscola County, Mich.—Sheep have not done well; neither have lambs. I think that fully eight per cent. of the whole number of sheep have died.

Appanoose County, Iowa.—The loss of sheep and lambs this spring is very great. Entire flocks have been destroyed by scab, which prevails to an alarming extent. The loss of lambs in early spring exceeds anything I ever saw here; in some cases flock-masters allowed their lambs to perish by sheer neglect, and in other instances every lamb has been lost.

Kankakee County, Ill.—Many sheep have died of scab. A large number are being driven west.

Pike County, Ill.—The wolves have killed fully one-half of the lambs in the county.

Randolph County, Ill.—The winter has been extremely wet, and, lambs and sheep being without shelter, the loss has been almost total.

Washington County, Ohio.—In one flock of twelve hundred sheep, four hundred died; in another flock there was a loss of two hundred. Outside of these flocks, the loss has been about as usual, eleven per cent.

DISEASE AMONG COWS.

Windsor County, Vt.—Cows in this and some other counties are abort-

ing, even to greater extent than during the past two years. There have been several cases in my immediate neighborhood within a few days.

Hall County, Ga.—One-tenth of all the cows in this county have died this month with a disease heretofore unknown in this section, and we have no name for it.

DISEASE AMONG HORSES AND MULES.

Kane County, Utah.—A disease has appeared among our horses. The head swells as snake-bitten heads do. The animal appears stupid, and after a few hours the broods in the eye, or membranes between the upper lid and ball, swell, so as to burst and bleed. If fatal, they die in about twelve hours. No remedy discovered as yet. Mules seem to be more subject to the disease than horses, and mares more so than geldings and studs.

CHICKEN CHOLERA AND HOG CHOLERA.

Austin County, Texas.—Chicken cholera is prevailing; loss generally eighty to ninety per cent.; in some instances all have died. Alum, having been recommended, was tried without success; while green shallots and garlic, chopped fine and mixed with the food, seem to be beneficial.

Coahoma County, Miss.—Hog cholera prevails in the county; not fully developed; loss cannot as yet be estimated.

Hickman County, Tenn.—Hog cholera has been very fatal in some portions of this county.

PROTECTION OF BIRDS.

Alleghany County, Md.—The past month of April has been unusually rainy. The law passed at the last session of our State legislature for the protection of insectivorous birds is generally respected, and we look for very desirable results to our farming interests therefrom.

THE FISHERIES IN NORTH CAROLINA.

Pasquotank County, N. C.—The fisheries in this section have done well. The catch has been fair and the prices good. Perhaps the fisheries on Albemarle Sound and its tributaries have brought into the counties bordering upon them over \$1,000,000 this season. This business is large and profitable.

GRASSHOPPERS.

Salt Lake City, Utah.—We are surrounded, encompassed about, and overwhelmed with grasshoppers. These insects have hatched out the past spring by myriads, on the benches around the city, and in most of the unfrequented streets, so that now in the outside lots they are doing a great amount of damage. In my lot, which is on the east part of the town, they have destroyed all my young green vegetables, also my pie-plant, gooseberries, strawberry plants, potato vines, grape vines, old and young, and stripped nine-tenths of my trees of foliage, and now are cutting off the pea vines. As an instance of their voracity, on the 24th of April my place looked lovely in the morning, at noon the small insects commenced to travel in a body, and before sundown the place was as bare as if nothing had been planted, and they, staying around, kept it

so; and now we have the appearance of winter in the lots so affected. The insects have not traveled far into the city in any numbers, because the inhabitants of the outside lots are vigilant in their efforts to destroy all that they can. All modes are resorted to—digging holes, driving the insects into, and burying them in the mud; piling straw, surrounding them and driving them in, and then after dark burning them in the straw; putting a hoop in the mouth of a sack, sweeping them into sacks and crushing them; catching them in sheets and destroying them, &c. Though millions are killed daily, we are overrun with them, and people from the mountains say the hills are covered with small ones, yet to come down. It is a deplorable prospect, but we “are going to fight it out on that line.”

To-day (31st May) we had a lengthy, solid fall of snow and rain; on the hills surrounding us there is quite a depth of snow. The atmosphere was cool, but in the afternoon it cleared up and became warm.

Springville, Utah.—The grasshoppers are more numerous this season than ever before known; already more than one-half of the oats, wheat, and barley, have been destroyed by them. Farmers are replanting with corn. Much of the blossoms and young fruit are cut from the trees of the apple, peach, plum, and pear. Cherries not injured. Currants, gooseberries, strawberries, pie-plant, and vegetables, mostly destroyed.

STOCK IN DAKOTA COUNTY, NEBRASKA.

Dakota County, Neb.—The following extract was inadvertently credited in the last number to Douglas County:

In regard to the condition of cattle, I must say that the two great snow-storms of the past season have done much injury. One man in this county tried safely to winter two hundred head of cattle brought from Texas last fall. He lost *one-fourth* of the entire number, and fears that others may die before grass comes. It appears Texas cattle cannot be introduced here in safety. Nearly all poorly fed and weak cattle have either perished in the two great storms, or are in a fair way to die soon.

BOTANICAL EXPLORATIONS IN EAST TENNESSEE.

In accordance with instructions, I have made, since the 1st of June, a brief botanical exploration of the high mountain region of East Tennessee, bordering on the boundary line dividing this State from North Carolina, traveling the usual southwestern route, by the Virginia valley, into East Tennessee. I left the railroad at Carter station, about twenty miles south of the State line, and proceeded thence by a rough mountain road, crossing the Watauga River, to Elizabethtown, the county seat of Carter County. This place, located in an irregular alluvial basin on the Doe River, just above its junction with the Watauga, is surrounded by moderately high wooded mountains, the clear rapid mountain stream on which it is located affording excellent water-power, which is only partially improved. From this point, following up the increasingly rugged and contracted valley of Doe River, which at the time was swollen by recent rains to the size of a formidable stream, difficult of crossing by the ordinary method of fording, the next settlement reached was Doe River, seven miles distant, up to which point a branch railroad has been graded and prepared for track-laying, intended eventually to pass through the mountains on the east to connect with the railroad system of North Carolina and the Atlantic coast. Twelve miles further above this point I reached the upper settlement of

this section, directly adjoining the high mountain range of the Roan and Iron Mountains, dividing Tennessee from North Carolina. At Elizabethtown I secured the services of Mr. George Emmert as guide, who, in addition to an intimate knowledge of the whole country adjoining, is possessed of the tact and ingenuity peculiar to mountaineers in all countries. Never at a loss for a trail, always ready to meet emergencies, he was just the companion a stranger to the country would most desire on such a trip.

In making the principal ascent of Roan Mountain, we followed up one of the numerous branches into which Doe River divides, passing through a dense growth of hard-wood forests, consisting mainly of sugar maple, tulip tree, beech, oak, birch, chestnut, and linden, interspersed with occasional growths of wild cherry, magnolia, and horse-chestnut. The undergrowth presented a dense mass of shrubbery, including the kalmia laurel, rhododendron, azalea, oil nut (*pysularia*), and other forms common to more northern forests. The rich loamy and clay soil was everywhere saturated with moisture, resulting from recent rains. Only rarely, and at long intervals, was there any exposure of granitic rocks, which, as well as the decayed fallen trunks of trees, were densely covered with mosses and foliaceous lichens. The clear streams dashed over rocky beds, with crystal pools along their course, from which the guide took out, in an hour's time, a fine string of mountain trout.

In making the steeper ascents directly at the base of the mountain ridge, there was a gradual dwarfing of the forest growth, in which the ordinary species, so abundant below give place to a nearly exclusive preponderance of birch, which was continuous in its dwarfed aspects to the summit gap. Not till reaching this point, fully five thousand feet above the sea level, were we regaled with more than a passing glimpse of the range which we were so laboriously ascending. Here, however, the view opens on the smooth grassy slopes known by the country people under the significant name of "Mountain Balds." These grassy or bushy slopes are interspersed here and there by dark groves of balsam and spruce, which serve to give a pleasant variety to the landscape. From these smooth rounded knolls, a magnificent view is afforded of the surrounding country. In order to give time to a more thorough examination of the vegetation of the high summit range, we made camp for a night on the divide, taking shelter in a dense grove of balsam firs. Fortunately for us, the weather was unusually serene and pleasant. The next day we strolled leisurely over the different swells composing the main ridge, mounting to the highest rocky point, which, according to the accurate measurements of Professor Juyot, reached an elevation of six thousand two hundred and thirty-eight feet above the sea, falling but little below the highest summits in the Alleghany range.

This "beautiful Roan Mountain," so characterized by early travelers, has been a favorite resort of botanists since the time of Michaux's early explorations, in the last century. It was visited by the distinguished American botanist, Professor Gray, of Cambridge, in 1841, who noted, with his accustomed thoroughness, its botanical features. Being six weeks earlier in the season, I was able to add a few of the more forward spring plants to Dr. Gray's list, including, among others, the charming fringed phacelia, (*Phacelia fimbriata*, Michx.) Now, as in the time of these early travelers, these bald, grassy exposures are in extensive use for summer pasturage; and at the season of our visit, June 8 and 9, they were just being occupied for that purpose by the adjoining country people with their herds of cattle and small droves of breeding horses. Here the continuously cool atmosphere, abundance of nutritious grasses, and

clear, cool springs and rivulets of water comprise everything to be desired in making up a quadrupedal paradise.

The lateness of the season may be inferred from the fact that strawberries were in bloom June 9, and the fruit does not ripen till the latter part of July.

We were fortunate, after enjoying a few hours of fine weather and extensive prospect, to accomplish the descent just in time to escape one of those drenching rains so common on these high exposures.

In the lower valleys there is a considerable scope of tillable land composed of a rich soil similar in its general character to the celebrated Virginia Valley. It is well adapted to wheat, corn, grass, and ordinary field crops, the differences of soil and exposure indicating the special adaptation to particular crops. Grass is most luxuriant on limestone soils, but in the more broken districts is apt to be killed by the prolonged summer heat. In approaching the higher mountains the valleys contract, and steep timbered ridges extend to the edge of the swift-flowing watercourses. Here the farming lands are limited to small basins, significantly termed "coves," and occupy the less abrupt slopes which have been cleared of the natural forests. As the elevation increases there is greater coolness of the atmosphere, more frequent rains, and the seasons are favorable to the hardier varieties of small grain, potatoes, and northern fruits. In these mountain districts cattle-raising is the prominent branch of industry, and a system of roving pasturage is adopted as the season advances, gradually ascending to the higher grassy summits of the "bald mountains," to descend again to the lowlands with the recurrence of frost and snow.

Hogs, though of a very inferior breed, are raised at little expense, being allowed to run through the woods, where they feed on wild roots, and later in the fall fatten on acorn mast, chestnuts, and beech nuts.

The country throughout is well adapted to the growth of fruit, particularly apples, which everywhere look thrifty and produce largely, the surplus yield, for want of a convenient market, being generally distilled into apple brandy. Wild fruits and nuts are abundant in their season, and add their material attractions to the picturesque landscape.

It is the inexhaustible timber product of this region that will eventually constitute the main source of its wealth. Nowhere else are to be found such magnificent forests of sugar maple, beech, chestnut, tulip tree, oak, birch, &c. Mile after mile in almost wearisome succession tower aloft these monarchs of the woods. Pine, hemlock, and cedar occur mostly in scattered groves, indicating generally a sandstone substratum. Locust trees abound in certain sections, and the wild cherry attains an unusual size. A tree of the latter was pointed out to me having a diameter at base of nearly five feet, and a height of not less than one hundred feet; still thrifty and apparently sound to the heart.

In this connection, the prevalence of hard-wood growth, together with abundant water-power, and extensive beds of iron ore, plainly indicate the direction which future industry will take, aided by the construction of railroads, in developing a country distinguished for salubrity, beautiful scenery, and all the desirable accessories of civilized life.

C. C. PARRY,
Botanist.

Hon. HORACE CAPRON,
Commissioner.

GREAT SALE OF SHORT HORNS.

The largest sale of short horns ever effected in this country occurred at Xenia, Greene County, Ohio, June 8, when the famous Oakland herd of Daniel McMillan, was sold at auction. It is stated that nearly one thousand cattle breeders, from all parts of the United States and from Canada, were in attendance. The number of cattle sold was seventy-one, (including four cows with calves,) producing an aggregate of \$63,980, making an average of \$901 12, or including the four calves, seventy-five head, averaging \$853. The private sales from this herd within the past six months amount to \$20,100, making the aggregate \$84,080 for the entire herd. In addition there were thirty-three Berkshire hogs sold at \$1,008; and a Norman stallion brought \$3,100. Amount of total sales of stock of all kinds, including cattle previously sold at private sale, \$88,288. The following is a list of sales:

Fancy.—Bred by David Watson, Union County, Ohio. Calved November, 1854. Got by Mario 683½, (14799;) dam, imported Stapleton Lass, &c. Sold to Sam. Deyes, of Macomb, Illinois, for \$275.

Louan X.—Red and white. Bred by Jere. Duncan, of Paris, Kentucky. Calved December 6, 1857. Got by Duke of Airdrie, (12730;) dam, Louan II. &c. Sold to T. J. McGibbons, Cynthiana, Kentucky, for \$475.

Myrtle.—Roan. Bred by James Fullington, Irwin, Ohio. Calved March 13, 1858; and calf, Myrtle Princess. Red. Calved March 8, 1870. Cow got by imported Starlight, (12146,) 1003; dam, Lady Watson, &c. Calf got by Plantagenet 6031. Sold to James Fullington, Irwin, Ohio, for \$1,005.

Emma Palmer.—Red and white. Bred by G. C. Palmer, Greene County, Ohio. Calved June, 1858. Got by imported Warrior 1076, (12257;) dam, Young Emma, &c. Sold to Thomas Kirk, Fayette County, Ohio, for \$500.

Flora Bell.—Roan. Bred by R. G. Corwin, Dayton, Ohio. Calved October 16, 1858. Got by imported New Year's Day 746, (13383;) dam, Scottish Blue Belle, &c. Sold to A. Turnbull, Cedarville, Ohio, for \$265.

Jessie.—Red. Bred by David Watson, Union County, Ohio. Calved January 10, 1859. Got by Starlight II 2259; dam, Fancy, &c. Sold to Uriah Wilson, Fairfield, Ohio, for \$315.

Louan XII.—Red. Bred by Jere. Duncan. Calved April 30, 1859. Got by Orontes II 1966, (11877;) dam, Louan VIII. &c. Sold to R. G. Dunn, London, Ohio, for \$800.

May Day.—Red and white. Bred by Jacob Pierce, South Charleston, Ohio. Calved April, 1859. Got by Crusade 2676; dam, Delightful, &c. Sold to P. H. Campbell, Batavia, Illinois, for \$525.

Clinton Lady.—Red. Bred by James R. Mills, Reesville, Ohio. Calved March, 1861. Got by Duke of Thorndale 2787; dam, improved Louisa, &c. Sold to Jesse Hagler, Fayette County, Ohio, for \$850.

Kitty Clover.—Red and white. Bred by H. W. Rice, Paris, Kentucky. Calved March 14, 1860. Got by Master Mason 4161; dam, Fancy, &c. Sold to Uriah Wilson, Fairfield, Ohio, for \$340.

Louan XXI.—Red. Bred by Jere. Duncan, Paris, Kentucky. Calved March 13, 1862. Got by Duke of Airdrie; dam, Louan II, &c. Sold to George Murray, Racine, Wisconsin, for \$3,600.

Annie Eggleston.—Red. Calved March 28, 1863. Got by Belted Knight 3667; dam, Myrtle, &c. Sold to Thomas Kirk, Fayette County, Ohio, for \$730.

Louan XXIII.—Seven years old. Bred by Jere. Duncan, Paris, Kentucky. Sold to A. J. Dunlap, Galesburg, Illinois, for \$1,750.

Bride of Greenwood.—Red and white. Bred by David Selsor, Madison County, Ohio. Calved April 30, 1864. Got by Whittington 3559; dam, Bride IV, &c. Sold to George Gregg, Beachville, Canada West, for \$525.

Cressida.—Roan. Bred by the Shakers, Union Village, Ohio. Calved May 14, 1864. Got by Colonel Balco 3664; dam, Lady Butler II, &c. Sold to Uriah Wilson, Fairfield, Ohio, for \$455.

Mignonette.—Red. Calved May 10, 1864. Got by General Grant 4825; dam, Jessie, &c. Sold to C. C. & R. H. Parks, Waukegan, Illinois, for \$3,800.

Oxford Duchess.—Red. Calved April 27, 1865. Got by third Grand Duke of Oxford 4560; dam, Duchess of Oakland, &c. Sold to W. M. Baines, Metamora, Indiana, for \$1,075.

Belle of Oakland.—Roan. Calved September 29, 1861. Got by Starlight II; dam, Lady Watson, &c. Sold to L. C. Coffman, Fayette County, Ohio, for \$400.

Highland Lady.—Roan. Bred by J. M. Hill, Harriestown, Illinois. Calved January 7,

1865. Got by imported King Alfred 3653. (14760;) dam, White Lady, &c. Sold, with bull calf, to J. H. Spears, Tallula, Illinois, for \$2,075.

Louan XXXV.—Red. Bred by Jere. Duncan. Calved March 17, 1865. Got by Duke of Airdrie 2743; dam, Louan XV, &c. Sold to E. G. Bedford, Paris, Kentucky, for \$2,625.

Louan XXXIX.—Red. Bred by Jere. Duncan. Calved January 17, 1865. Got by Duke of Airdrie 2743; dam, Louan X, &c. Sold to T. J. McGibbons, Cynthiana, Kentucky, for \$1,650.

Eudora.—Roan. Calved August 5, 1865. Got by Grand Duke 3955; dam, Raspberry, &c. Sold to Charles Hook, Xenia, Ohio, for \$500.

Louan of Oakland.—Red. Calved August 15, 1865. Got by Prince of Bourbon 6060; dam, Louan XXI, &c. Sold to Milton Briggs, Newton, Iowa, for \$800.

Wagon.—Red. Calved October 25, 1865. Got by General Grant 4825; dam, Clinton Lady, &c., and calf, Pearl of Oakland. Calved April 28, 1870. Got by Plantagenet 6031. Sold to W. J. Neely, Ottawa, Illinois, for \$3,000.

Orchard.—Calved January 14, 1866. Got by Duke of Airdrie 2743; dam Zenaida, &c. Sold to Jesse Hagler, Fayette County, Ohio, for \$505.

Anna Eggleston.—Red. Calved December 1, 1866. Got by General Grant; dam, Anna Eggleston, &c. Sold to Asa Bates, Union County, Ohio, for \$370.

Fanny Hunt.—Red. Bred by C. M. Clark, Springfield, Ohio. Calved April 25, 1867. Got by Duke of Clark 4720; dam, Anna Hunt, &c. Sold to A. J. Dunlap, Galesburg, Illinois, for \$1,025.

Anna Clark.—Red and white. Bred by C. M. Clark. Calved July 1, 1867. Got by Duke of Clark 4720; dam, Lady of Clark, &c. Sold to Milton Briggs, Newton, Iowa, for \$950.

Sixth Duchess of Oakland.—Red and white. Calved November 21, 1867. Got by Plantagenet 6031; dam, Fourth Duchess of Oakland, &c. Sold to George Gregg, Beachville, Canada West, for \$1,510.

Fain Lady.—Red. Calved December 8, 1867. Got by General Grant 4825; dam, May Day, &c. Sold to P. H. Campbell, Batavia, Illinois, for \$525.

Rosa Bonheur.—Red roan. Calved December 20, 1867. Got by General Grant 4825; dam, Maria IV, &c. Sold to James Fullington, Union County, Ohio, for \$750.

Seventh Duchess of Oakland.—Red. Calved February 22, 1868. Got by Plantagenet 6031; dam, Duchess of Oakland. Sold to James Fullington, Union County, Ohio, for \$1,400.

Honey Bud.—Roan. Bred by R. G. Dunn, London, Ohio. Calved March 28, 1868. Got by Boxer; dam, Enchantress, &c. Sold to P. H. Campbell, Batavia, Illinois, for \$600.

Linda Belle II.—Red. Calved March 1, 1865. Got by Plantagenet 6031; dam, Linda Belle, &c. Sold to J. H. Spears, Tallula, Illinois, for \$1,525.

Third Louan of Oakland.—Roan. Calved September 8, 1868. Got by Speculator 7284; dam, Louan of Oakland, &c. Sold to Joel W. Armstrong, Deer Park, Illinois, for \$600.

Eudora II.—Red. Calved October 9, 1868. Got by Plantagenet 6031; dam, Eudora, &c. Sold to P. H. Campbell, Batavia, Illinois, for \$910.

Fourth Louan of Oakland.—Red. Calved October 10, 1868. Got by Second Duke of Geneva 5562; dam, Louan X, &c. Sold to J. C. Jenkins, Petersburg, Kentucky, for \$3,650.

Flora Belle III.—Roan. Calved November 7, 1868. Got by Loyal Duke of Oakland 6977; dam, Flora Belle, &c. Sold to J. H. Spears, Tallula, Illinois, for \$1,325.

Forest Queen.—Red. Calved November 13, 1868. Got by Plantagenet 6031; dam, May Day, &c. Sold to George Murray, Racine, Wisconsin, for \$2,800.

Sixth Louan of Oakland.—Red and white. Calved November 21, 1868. Got by Plantagenet 6031; dam, Louan XXI, &c. Sold to George Murray, Racine, Wisconsin, for \$2,000.

Florine.—Ten months old. Sold to Thomas Mills, Nashota, Wisconsin, for \$525.

Minna Watson.—Roan. Calved September 10, 1869. Got by Loyal Duke of Oakland, 6977; dam, Belle of Oakland, &c. Sold to H. B. Sherman, Toledo, Ohio, for \$525.

Eudora III.—Roan. Calved October 15, 1869. Got by Plantagenet 6031; dam, Eudora, &c. Sold to David Baker, Richland County, Ohio, for \$335.

Oxford Queen.—Red and white. Calved December 10, 1869. Got by Plantagenet 6031; dam Oxford Duchess, &c. Sold to J. W. Armstrong, La Salle County, Illinois, for \$560.

Magenta.—Red. Calved January 18, 1870. Got by Plantagenet 6031; dam, Clinton Lady, &c. Sold to J. H. Spears, Tallula, Illinois, for \$1,105.

Seventh Louan of Oakland.—Red. Calved March 18, 1870. Got by Plantagenet 6031; dam, Louan XXXV, &c. Sold to E. G. Bedford, Paris, Kentucky, for \$300.

Fourth Belle Republic.—Roan. Bred by John Martin, Union Village, Ohio. Calved September 12, 1863. Got by Imperial Lord Raine II (14662;) dam, Atlanta, &c. Sold to M. Briggs, Newton, Iowa, for \$500.

Fifth Belle Republic.—Roan. Bred by John Martin. Calved July 17, 1864. Got by Belted Mac 3668; dam, Atlanta. Sold to A. Bates, Union County, Ohio, for \$445.

Sixth Belle Republic.—Roan. Bred by John Martin. Calved August 27, 1865. Got by Belted Mac 3668; dam, Atlanta, &c. Sold to Cyrus Jones, Towanda, Illinois, for \$250.

One hundred and forty-first Belle Republic.—Red. Bred by S. Corbin, Bourbon County, Kentucky. Calved March 4, 1864. Got by Sam. Wiley 3412; dam, Mary, &c. Sold to M. Briggs, Newton, Iowa, for \$700.

Emma II.—Red. Bred by B. Caragna, Cincinnati, Ohio. Got by First Great Republic 6822; dam, Emma, &c. Sold to P. H. Campbell, Batavia, Illinois, for \$730.

Tenth Belle Republic and calf.—Red. Bred by John Martin, Union Village, Ohio. Calved February 25, 1866. Got by First Great Republic 6822; dam, Medora IV, &c. Sold to M. Briggs, Newton, Iowa, for \$700.

Sallie.—Red and white. Bred by B. Caragna, Cincinnati, Ohio. Calved June 30, 1868. Got by Noble Duke 8702; dam, Adelaide, &c. Sold to C. C. and R. H. Parks, Waukegan, Illinois, for \$485.

Alice.—Red and white. Bred by B. Caragna. Calved July 10, 1866. Got by Remick, 8943; dam, Maria, &c. Sold to D. Baker, Richland County, Ohio, for \$350.

Plumwood Elf.—Bred by R. G. Dunn, Madison County, Ohio. Calved May 13, 1869. Got by Bon Ton 5334; dam, Ellensmere, &c. Sold to George Gregg, Beachville, Canada West, for \$310.

BULLS.

Oxford Lad.—Ten years old. Sold to Samuel Deyes, Macomb, Illinois, for \$75.

Royal Oakland.—Red. Calved March 17, 1868. Got by Plantagenet 6031; dam, Mignonette, &c. Sold to James Fullington, Union County, Ohio, for \$1,300. [This bull was sold the next day by Mr. F. for \$2,000.]

Sherman.—Red. Bred by W. H. Palmer, Fayette County, Ohio. Calved April 15, 1868. Got by Highland Duke; dam, Lady Blanche, &c. Sold to P. Hitchcock, Geauga County, for \$320.

Royal Lad.—Red and white. Calved October 20, 1868. Got by Plantagenet; dam, Oxford Duchess, &c. Sold to J. W. Shinn, Selma, Ohio, for \$825.

Climax.—Eleven months old. Sold to Thomas Miles, Nashota, Wisconsin, for \$350.

Defender.—Red and white. Calved August 15, 1869. Got by Lisa; dam, Minna Eggleston, &c. Sold to Edward Green, Delaware, Ohio, for \$250.

Baron Oakland.—Red. Calved September 12, 1869. Got by Plantagenet; dam, Louan of Oakland, &c. Sold to Samuel Deyes, Macomb, Illinois, for \$525.

Financier.—Red. Calved January 2, 1870. Got by Plantagenet; dam, Louan XXXIX. &c. Sold to T. J. McGibbons, Cynthia, Kentucky, for \$390.

Guardman.—Red. Calved February 14, 1860. Got by Plantagenet; dam, May Day &c. Sold to H. B. Sherman, Toledo, Ohio, for \$410.

Enchanter.—Roan. Calved April 20, 1860. Got by Roan Duke; dam, Jenny Mills. &c. Sold to Renick & Wiggins, Circleville, Ohio, for \$305.

Imperial Oakland.—Red. Calved March 13, 1870. Got by Plantagenet, dam, Louan XII, &c. Sold to Geo. M. Colter, Reesville, Ohio, for \$405.

Crown Prince of Oakland.—Red. Calved March 18, 1870. Got by Plantagenet; dam, Louan X, &c. Sold to J. H. Spears, Tallula, Illinois, for \$450.

Plumwood Oxford 8798.—Roan. Bred by R. G. Dunn. Calved March 3, 1868. Got by Boxer 5395; dam, Rosa Clay, &c. Sold to Wm. Steele, Mt. Pleasant, Pennsylvania, for \$400.

Contributor.—Nine months old. Sold to N. Walker, Baltimore, Maryland, for \$260.

Royal Competitor.—Red. Calved November 10, 1866. Got by General Grant; dam, Louan XXIII, &c. Sold to M. Briggs, Newton, Iowa, for \$700.

Echo of Oakland.—Roan. Calved April 2, 1870. Got by Plantagenet; dam, Louan XXIII, &c. Sold to A. J. Dunlap, Galesburg, Illinois, for \$505.

The imported Norman stallion "Phil. Sheridan" was sold for \$3,100 to J. Q. Hutchinson and J. R. Marshall, of Xenia, Ohio.

SALES OF SHORT-HORNS IN ENGLAND.

At the Farnley sale of short-horns, held February 25, nineteen cows and ten bulls, bred by Mr. F. H. Fawkes, were sold; the cows averaging £30 7s. 6d., and the bulls £37 13s. 11d.

At the Beaumont Grange sale, held February 25, thirty head from Mr. W. W. Slye's herd were sold; the cows bringing an average of £45 2s. 3d., and the bulls £29 6s. 7d. per head.

At the annual sale of Mr. Milne, of Kinaldie, Aberdeenshire, Scotland, prices ranged from 14 to 30 guineas for bulls, and from 11 to 40 guineas for heifers. The bulls averaged £25 per head.

RHEEA FIBER.

A letter to the Commissioner of Agriculture from A. H. Bleelynder, secretary of the Agricultural and Horticultural Society of India, gives some information concerning the cultivation in India of the rhea fiber, which he says is identical with China grass, the *Urtica tenacissima* of Roxburgh and the *Baccharia nivea* of Latin botanists. He says:

The "rhea" of Assam (*Baccharia nivea* of botanists) is indigenous to Cachar and the northeastern districts of Bengal, Rungpore, and Dinagepore, where it is known under the name of "kunchoor." It is also indigenous to Burmah, and is the "pan" of the Shan country, the "calooe" of Sumatra, and the "ramee" of the Eastern Archipelago. It is identical with the "chuma" of the Chinese, from which the well-known China-grass cloth is manufactured.

About thirty years ago Colonel Jenkins, the commissioner of Assam, sent a few rhea plants to the Agricultural and Horticultural Society of India. From this a nucleus was formed in the economic portion of their garden, and retained in cultivation till last year, when the entire garden was resumed by government. From this cultivation of about half an acre many thousands of cuttings have been distributed over the country.

Like several other plants which are readily multiplied by suckers, layers, and cuttings, the rhea does not yield fertile seed; but this is of less consequence, for, as already observed, it can be readily propagated by other means. From a small plot of ground sufficient stock can be obtained in one season to plant a large area. If the soil be good and care is bestowed on the plants by keeping them clear of weeds, and irrigating when necessary, and the ground carefully drained when too wet, three cuttings may be annually obtained.

The time for cutting is when the plant is in flower; if delayed beyond that period the stalk becomes hard and the fiber harsh.

The most extended cultivation that has been brought to the notice of the society is that of the Messrs. Morrell, at Morrellgunge, in the Jessore Sunderbunds. The plant thrives most luxuriantly in that locality, and the fiber prepared under their superintendence is, as respects quality and strength, all that can be desired, precisely similar to the chuma, and such as would command a fair price, say £70 per ton in the English market. But I am given to understand that even this figure will not allow a fair margin of profit after deducting the cost of preparation, and allowing for all other contingent expenses in the shape of land carriage, freight, custom duty, &c.

The rhea possesses this advantage over other well-known fibrous-yielding plants—flax, hemp, sunn, jute—that it is a perennial. On the other hand, there is this disadvantage, that water-steeping or maceration destroys the strength of the fiber. The dry process, by hand, has been the mode hitherto adopted in India to remove the fiber from the stem. The process adopted by the Chinese is tedious. The Assamese process is so exceedingly slow and expensive, a man not being able to separate more than one-half a pound of fiber from the stalks per day, that the cost of preparation has hitherto prevented the export from this country, except to a very limited extent, of a fiber which is probably the strongest in the world, and which is capable of being worked into the most beautiful fabrics. Several attempts have been made to substitute machinery for hand labor, but, so far as I am aware, all have hitherto proved ineffective.

TRIALS OF HARVESTING MACHINERY.

The Missouri State Board of Agriculture have ordered a field trial of reapers, mowers, horse hay-forks, hay-stackers, hay-rakes, and all kinds of machinery germane to harvesting, to be held near St. Louis during the harvest of 1870. The trial will be conducted under the immediate supervision of the board, some of the members of which will serve on

each of the awarding committees. The trial will be conducted in the main under the rules of the reaper trial held at Dixon, Illinois, which were also adopted at the last World's Fair held in France, viz: 1. Quality of work, representing perfection, 40. 2. Simplicity of construction, representing perfection, 10. 3. Durability of construction, representing perfection, 15. 4. Ease of draft, representing perfection, 20. 5. Market price, 5. 6. Facility of management, 10. A perfect machine, (reaper or mower,) 100. Entry fees of \$5 to \$10 will be charged for machines.

The award will be the certificate of the Missouri State Board of Agriculture, and that to be the first and only reward.

The Ohio State Board of Agriculture will conduct a competitive trial of reapers and mowers at Mansfield, Ohio, during the coming harvest; the trial to commence at such time as wheat may be in proper condition to test the machines, and will continue from day to day until all machines are satisfactorily tried. The scale of merits, as agreed upon by the committee, is the same as that adopted for the Missouri trial. The first prize will be a gold medal for the best reaping machine; the second, a gold medal for the best mowing machine; the third, a gold medal for the best reaping and mowing machine.

WEST NEWBURY FARMERS' CLUB.

Hints for the guidance of farmers' clubs may prove of great advantage to agriculturists. These primary organizations, inexpensive, social, and informal, should bring out much of individuality, variety, and originality, and prove to be of great local utility. As a contribution to the general fund of interest in these organizations, the following facts concerning the Farmers' Club of West Newbury, Massachusetts, are given:

At a recent meeting a committee of six members was chosen to visit eighteen farms, belonging to members of the club, examine buildings, cattle, and other animals, note the general management pertaining to the farm, and report upon the same at some future meeting of the club. Calvin Rogers, Wm. Merrill, S. E. Noyes, Amos Poor, and Thomas G. Ordway, were chosen the committee of examination. The following subjects for discussion were also agreed upon:

1. Pasture lands—how improved; how much per acre will it do to lay out for improvements; comparative condition now and twenty-five years ago.

2. Ought we to set out apple and pear trees? What is the general condition of the trees, the prospects, &c.?

3. Does it pay to raise root crops largely for stock? What is the cost, the value, and which are the best varieties?

4. Does it pay to raise hogs for market? What is the cost of pork, with corn at \$1.25 per bushel?

5. Ought farmers to make a specialty of any one crop?

6. Can the farmer afford to hire help? How much can he afford to pay for ordinary help? How much can a man earn in cultivating hoed crops, setting aside cost of land? Comparative earnings of farmers and mechanics.

7. Is farming in Essex County less profitable than in other localities? Can one afford to hire money to buy land, or to make improvements on land?

8. Has chemistry been any help to the farmer? Can he afford to use manufactured fertilizers?

9. What birds are beneficial to the farmer, and what injurious?
10. Treatment of domestic animals, including feeding, &c.
11. Fertilizers.
12. Plowing.
13. Protective tariff—how does it bear on the farmer?

HOW TO KILL THE CURCULIO.

The St. Joseph Fruit Growers' Association recommend the following method of destroying this pest, the credit for the discovery of which is ascribed to Mr. B. Ransom, of St. Joseph, which appears to have been quite effective, if the statement of the extraordinary number of curculios destroyed can be credited. It is often found in the experience of the entomologist of this Department that other and quite different (and sometimes beneficial) insects are assumed to be the curculios:

Put the orchard in the best order: level down the soil about the root of every peach tree, and smooth a circle for a diameter of two and a half feet from the tree as a center. Have the ground very clear around the base of the tree. Do not leave a single hole near the tree. Leave no place where the curculio can hide, except under the shelter you provide. Now lay close to the tree, and close to the ground, about four pieces to a tree, either chip, or bark, or board, or lath, or rag, or anything, for a cover.

The curculio will conceal itself under this shelter, and may be destroyed by the thousands. Go round every day and turn over each chip. Kill every curculio. They will generally adhere to the chip, but may often be found on the ground under the chip.

By this method Mr. Whittlesey killed two thousand seven hundred and fifteen curculios about the roots of two hundred trees on the 15th: in four hours under the same trees he killed one thousand five hundred and sixty-six. In three small orchards Mr. W. and Mr. Ransom destroyed upwards of five thousand in five hours. In four hours, in his own orchard, Mr. R. destroyed two thousand one hundred and nine, by actual count. Peach-growers are called upon to unite in ridding the orchards of the pest thus early in the season, and thus save the crop, which is now threatened with destruction.

THE STATE OF OREGON.

The San Francisco Bulletin speaks as follows of the great resources and bright future of this rich agricultural district on the Pacific:

It is cheering to notice the rapid strides that our sister Pacific State is making in the direction of healthy and permanent prosperity. The construction of a trunk railroad through her central valleys, from the Columbia to the California line, soon to be connected with the Pacific railroad, both by way of Idaho and this State; the multiplication of manufactures and natural products; the enlargement of home commerce; the greater amount of land under cultivation; the growth of towns and enhancement of real values; the quickened demand for land, and the influx of immigration—these are all circumstances which the telegraph reports daily, and which make up a record of substantial progress. The fact is that Oregon, in common with California, is just entering on a career of such prosperous development as marked the history of several of the Mississippi States in the decade following 1850. This was delayed twenty years by the remoteness and isolation which have been ended at last, and by the completion of the Pacific railroad and the construction of local branches.

There is no more orderly and economical State in the Union than Oregon. All its growth has been gradual and healthy, for while it possesses great mineral resources, it has never been demoralized by great mining excitements. With an area larger than that of Pennsylvania and New York combined, half of which is adapted to agriculture

and grazing purposes, and the remainder valuable for its famous timber, it has yet scarcely one hundred and twenty thousand inhabitants, and not over six per cent. of its arable lands has passed into private ownership, while hardly two per cent. is under actual cultivation. Most of its arable land is in a series of valleys, well watered, fertile and picturesque. It is a great wheat State. Its apple orchards are not equaled anywhere in the East, and its climate favors a greater variety of products than any of the Northern States. It has mines of iron and coal, as well as of gold, silver, copper and lead.

It is evident that California and Oregon are to be honorable competitors in stimulating emigration westward, and the gain of one will be measurably the gain of the other. Oregon unquestionably has the agricultural, the commercial, and the mineral resources to make her one of the most prosperous States of the Union; her climate is inviting, and her scenery is in some respects superior even to that of California. The board of statistics, immigration, and labor exchange of Portland has recently issued for gratuitous distribution a pamphlet of sixty-two pages, treating comprehensively of the State as an agricultural and commercial region, and giving succinct information about its climate, people, markets, price of land, wages, cost and routes of travel, industries, resources, and improvements. This pamphlet may be obtained free of charge by addressing John M. Drake, secretary Immigration and Labor Exchange, Portland, Oregon.

RECLAMATION OF TIDE LANDS IN SOUTHWESTERN NEW JERSEY.

The following statement relative to the reclamation of tide lands in the southwestern part of New Jersey is condensed from the report for 1869 of the State geologist, Professor George H. Cook.

As early as the year 1700, marshes in the vicinity of Salem, New Jersey, were diked and drained. At the present time there are 15,000 acres of such reclaimed lands in Salem County, besides large areas in Gloucester, in Cumberland, and in Cape May County.

The work of reclamation is now in great measure conducted by associated enterprise, under a special State law, by one provision of which no tract can be made subject to such improvement until consent is obtained from the owners of two-thirds of the territory in question. After the necessary authority has been obtained and the preliminary surveys completed, a ditch is dug on the site of the proposed embankment to secure a good foundation, and outside of this another ditch sufficiently wide to furnish the material of the embankment. Special attention is given to securing a firm foundation, experience having fully demonstrated the necessity of care in this respect. "Cross embankments" built across meadows, having but a thin layer of firm mud over a peaty substratum, have settled gradually till a solid bottom has been reached; in other cases they have sunk quickly out of sight. As soon as a marsh is diked and drained the spongy soil commences to dry and the surface gradually sinks. Tillage and the withdrawal of material by annual cropping increases this subsidence of the soil, till in many cases the meadow sinks to low-water mark, when the usual system of drainage by ditches and sluices fails to free the land from accumulating moisture, and cultivation becomes unprofitable. Skillful managers prefer to counteract this sinking by allowing the tide to overflow the meadow in the winter, during which period a layer of mud, varying from a mere film to twelve inches in thickness, is deposited. Where the surface has

actually settled to low-water mark, a common practice is to leave the meadow open to the tide for a course of years until the deposit of alluvium attains sufficient thickness to warrant a resumption of cultivation. Pumping by steam or wind power, as practiced in England and Holland, would be of great advantage in draining these low-water levels and maintaining them in productive condition.

The Salem County embankments are generally four feet high above the level of the meadows, with a width of eight feet at the base, and three feet at the top. The dimensions, however, vary according to the requirements of situation. At Finn's Point, Lower Penn's Neck, where there is great exposure to the action of the Delaware River, the embankment is ten feet high, with a width of thirty feet at the base, and twelve feet at the top, and is faced with stone on the river side. An area of 1,200 acres is protected by this embankment. In Cumberland County the embankments are frequently from three to seven feet high, built immediately on the surface of the meadows. Where the mud taken from a ditch twelve feet wide by three feet deep furnishes the material of the embankment, the cost of construction is about \$3 per rod. At Lower Penn's Neck the first cost of embankments and ditches for drainage averages about \$10 per acre. Steam dredging machines, which have recently been introduced, tend to diminish the cost of construction, and, when circumstances of situation demand, accomplish work too heavy to be performed by hand.

The expenditure for repairs of embankments and drains varies with the degree of exposure, ranging generally from fifty cents to \$1 per acre annually. At Finn's Point the annual cost of repairs averages \$2 per acre. A large proportion of this expenditure is in consequence of the perforations made in the embankments by muskrats and soldier-crabs.

These banked meadows in Salem and Cumberland, once almost worthless, now furnish excellent grazing lands, and on the lowest of the meadows herd's-grass is grown for seed, the average yield being (with very little care or expense in cultivation) about thirty bushels per acre, valued at 75 cents per bushel. The meadows along Maurice River produce, without manuring, very large crops of timothy, grain, and roots. The meadows at Finn's Point yield thirty to forty bushels of wheat per acre, and one hundred and fifty to two hundred bushels of potatoes per acre.

The blue and grey mud soils are suited to all crops. The black mud is better adapted to Indian corn than to wheat. Lime is applied with excellent effect on all these meadows. The average value of the banked meadows in Salem County is probably about \$100 per acre: some meadows being worth \$400 to \$500 per acre.

Professor Cook states that there are 295,474 acres of fresh and salt water tide meadows in New Jersey, of which 20,000 acres, mostly situated on Delaware River and Bay are inclosed by dikes.

Statement showing the quantities and values of certain domestic exports from the United States to the Dominion of Canada and all other British possessions in North America, during the year ended June 30, 1869.

| Commodities. | DOMINION OF CANADA. | | ALL OTHER BRITISH POSSESSIONS IN NORTH AMERICA. | |
|--|---------------------|----------------|---|--------------|
| | Quantity. | Value. | Quantity. | Value. |
| Breadstuffs: | | | | |
| Barley.....bush..... | 95 | \$188 | 6,244 | \$6,982 |
| Bread and biscuit.....lbs..... | 115,676 | 9,210 | 75,592 | 4,492 |
| Indian corn.....bush..... | 2,160,948 | 1,844,048 | 7,196 | 7,050 |
| Indian meal.....bbls..... | 98,991 | 527,714 | 27,227 | 139,813 |
| Oats.....bush..... | 284,958 | 154,606 | 5,971 | 4,186 |
| Rice.....lbs..... | 7,238 | 523 | 15,544 | 258 |
| Rye.....bush..... | 1,055 | 1,165 | 10 | 15 |
| Rye flour.....bbls..... | 1,393 | 11,040 | | |
| Wheat.....bush..... | 3,358,597 | 4,470,304 | 24,680 | 32,423 |
| Wheat flour.....bbls..... | 347,198 | 2,843,697 | 155,481 | 1,025,902 |
| Potatoes.....bush..... | 164,048 | 84,209 | 792 | 840 |
| Agricultural implements..... | | 98,031 | | 28,027 |
| Animals, living, of all kinds..... | | 124,571 | | 123,275 |
| Provisions and tallow: | | | | |
| Beef.....lbs..... | 421,607 | 38,191 | 494,629 | 44,117 |
| Butter.....lbs..... | 7,720 | 2,918 | 112,854 | 39,834 |
| Cheese.....lbs..... | 17,310 | 3,061 | 41,157 | 7,187 |
| Fish, fresh..... | | 3,232 | | 928 |
| dried or smoked.....cwt..... | 93 | 598 | 28 | 277 |
| pickled.....bbls..... | 2,041 | 15,349 | 206 | 1,227 |
| other cured..... | | 820 | | 922 |
| Hams and bacon.....lbs..... | 44,192 | 7,930 | 113,825 | 15,432 |
| Lard.....lbs..... | 177,574 | 30,865 | 73,602 | 10,197 |
| Pork.....lbs..... | 5,992,258 | 807,729 | 1,798,925 | 240,216 |
| Tallow.....lbs..... | 370,912 | 43,251 | 2,800 | 310 |
| Vegetables, fresh or preserved..... | | 39,898 | | 5,632 |
| Tobacco, leaf.....lbs..... | 4,525,661 | 630,800 | 30,348 | 4,945 |
| cigars.....M..... | 28 | 392 | 26 | 1,126 |
| snuff.....lbs..... | 5,789 | 2,767 | 3 | 2 |
| other manufactures of..... | | 106,332 | | \$1,696 |
| Wood, and manufactures of: | | | | |
| Boards, clapboards, deals, planks, joists, &c.....M..... | 3,179 | 48,018 | 52 | 1,812 |
| Laths, palings, pickets, &c.....M..... | 150 | 350 | 92 | 232 |
| Shingles.....M..... | 118 | 326 | | |
| Box shooks..... | | 20 | | |
| Other shooks, staves, and headings..... | | 24,221 | | 5,764 |
| All other lumber..... | | 20,123 | | 811 |
| Firewood.....cords..... | 9,826 | 23,287 | | |
| Hop, hoop, telegraph poles..... | | | | 15 |
| Logs, masts, spars, and other whole timber..... | | 2,192 | | 311 |
| Timber, sawed and hewn.....M feet..... | 11,874 | 212,638 | 1 | 81 |
| All other timber..... | | 12,542 | | 217 |
| Household furniture..... | | 155,202 | | 19,477 |
| Boxes, coopered ware, &c..... | | 11,848 | | 5,320 |
| All manufactures not specified..... | | 251,959 | | 12,858 |
| Wool, raw and fleece.....lbs..... | 412,375 | 145,931 | 30,328 | 5,594 |
| manufactures of..... | | 73,792 | | 12,274 |

Statement showing the quantities and values of certain commodities imported from, and of articles re-exported to, the dominion of Canada, during the year ending June 30, 1869.

| Commodities. | IMPORTS. | | RE-EXPORTS. | |
|---|--------------|---------------|-------------|----------|
| | Quantity. | Value. | Quantity. | Value. |
| Breadstuffs: | | | | |
| Barley.....bush.. | 4, 106, 899 | \$4, 624, 007 | ..... | ..... |
| Bread and biscuit.....lbs. | 603 | 53 | ..... | ..... |
| Indian corn.....bush.. | 778 | 733 | ..... | ..... |
| Indian meal.....bbls. | 197 | 519 | ..... | ..... |
| Oats.....bush.. | 299, 866 | 131, 643 | ..... | ..... |
| Rice.....lbs. | 81, 121 | 3, 258 | 231, 215 | \$7, 288 |
| Rye.....bush.. | 198, 748 | 157, 731 | ..... | ..... |
| Rye flour.....bbls. | 224 | 773 | 50 | 200 |
| Wheat.....bush.. | 1, 337, 227 | 1, 673, 629 | ..... | ..... |
| Wheat flour.....bbls. | 90, 570 | 445, 761 | 8, 254 | 57, 022 |
| Potatoes.....bush.. | 81, 005 | 30, 501 | ..... | ..... |
| Fish, fresh and cured..... | | 1, 003, 904 | ..... | 16, 311 |
| Flax, and manufactures of: | | | | |
| Raw.....tons. | 763 | 182, 940 | ..... | ..... |
| Manufactures by yards.....sq. yds. | | 864 | ..... | ..... |
| Other manufactures..... | | 16, 364 | ..... | 782 |
| Fruits, all kinds..... | | 29, 225 | ..... | 111, 462 |
| Hemp: | | | | |
| Raw.....tons. | | | 380 | 86, 459 |
| Manufactures by yard..... | 24 | 12 | ..... | ..... |
| Other manufactures of..... | | 965 | ..... | 781 |
| Salt.....lbs. | 23, 186, 834 | 70, 245 | 9, 173, 844 | 10, 836 |
| Tobacco: | | | | |
| Leaf.....lbs.. | 4, 214 | 1, 896 | 72, 897 | 19, 252 |
| Cigars.....lbs.. | 2, 469 | 6, 123 | 20, 522 | 43, 065 |
| Snuff.....lbs.. | 6 | 3 | ..... | ..... |
| Other manufactures..... | | 474 | ..... | 105 |
| Wood, and manufactures of..... | | 7, 993, 885 | ..... | 3, 329 |
| Wool, sheep, goats', and camels' hair, and manufactures of: | | | | |
| Raw and fleece.....lbs.. | 2, 601, 359 | 714, 929 | 280, 486 | 36, 769 |
| Clothes and cassimeres..... | | 17, 905 | ..... | 114 |
| Rags, shoddy, and waste.....lbs.. | 515 | 60 | ..... | ..... |
| Shawls..... | | 881 | ..... | ..... |
| Blankets..... | | 323 | ..... | ..... |
| Carpets.....sq. yds.. | 1, 133 | 1, 341 | 3, 164 | 1, 113 |
| Dress goods.....sq. yds.. | 40, 687 | 11, 698 | 100, 932 | 25, 386 |
| Hosiery, shirts, and drawers..... | | 400 | ..... | ..... |
| Manufactures not specified..... | | 15, 163 | ..... | 15, 558 |

THE KEW GARDENS.

The report for 1868 of the royal gardens at Kew, England, has been received, showing the progress of the work during that year. The attendance of visitors was unusually large, aggregating 502,369, of whom 134,728 were present in June. It includes three departments, viz, hot-houses and green-houses, botanic gardens, and pleasure grounds. The following statement is made concerning the interchange of live plants and seeds:

The number of contributors has been one hundred and seventy-two during the past year, and they have sent 2,316 living plants, and 3,302 packets of seeds. During the same period 1,368 living plants and 4,576 packets of seeds have been distributed to one hundred and thirty-eight individuals. This is independent of 2,000 shrubs and trees sent to various public parks, &c., and of 2,126 bedding-out plants distributed to the poor of London and its neighborhood.

Valuable additions were made to the museums and to the herbarium and library from all parts of the world. No less than 4,630 plants or trees have been used in replacing losses from age, and from the effects of the late severe winters.

FACTS FROM VARIOUS SOURCES.

BEET SUGAR IN CALIFORNIA.—The beet sugar works at Alvarado, Alameda County, California, are reported as progressing to completion, at an estimated cost of \$75,000, and will have a capacity for crushing fifty tons of beets per day. The capital stock of the company is \$260,000. The mill is to be in running order by the time of the next beet crop. The enterprise will be conducted by men who have had much practical experience in the business in German factories, and in this country. At the commencement of operations one hundred to one hundred and fifty men will be employed. Responsible parties offer to contract to raise any quantity of the beet for \$4 per ton. The average price paid in France, Belgium, and Germany for the five years ending with 1868 was \$4 20 per ton. The beet contains on an average ten per cent. of sugar, but seldom more than seven and a half per cent. is actually realized in the sugaries of France, where the method is by the direct pressing of the pulp. In Belgium and Germany fully eight per cent. is the fair working product, so that eight pounds of merchantable sugar is the certain product of one hundred pounds of the beets grown in the soil and climate of those countries. It is stated that an analysis of California-grown beets shows that they contain ten per cent. of sugar, and may, therefore, be expected to produce at least one hundred and sixty pounds of sugar to each ton of beets.

SUCCESS OF A VINICULTURIST.—In the spring of 1866, an intelligent German, acquainted with grape culture and wine-making, bought forty acres of land for \$400, in Put-in-Bay, (an island in Lake Erie,) and immediately commenced planting vines. On the 9th of June three and a half acres were planted with the Delaware and Concord, and at the present time seven acres are planted with Norton's Virginia and Ives's Seedling, and one quarter of an acre with Iona. There is also a nursery of three hundred of the Catawba, and forty other varieties for experimental purposes. In 1868 there was a product of one and a half tun of wine of the Concord grape; and one fourth of a tun of the Delaware. In 1869, when the crop was very poor, three and one-half acres produced \$700 worth of grapes. When the land was purchased it was in a rough state, without buildings or fence. It is now provided with a fence, a two-story house, barn, cellar in the rock, well, &c., and its proprietor has a stock on hand of 10,000 gallons of wine, consisting of Red Delaware, and Red and White Concord, Norton, and Catawba.

FRUIT ON THE ILLINOIS CENTRAL RAILROAD.—In 1869 the fruit business on the Illinois Central railroad, from Centralia and stations south of that place, to Chicago, amounted, in a season of fifty-five days, to over 2,500 tons. The same year the railroad company sold to one thousand five hundred and twenty-one purchasers 85,860 acres of land, at an average price of \$10 48 per acre—making an aggregate of \$899,348 71. Fifty-six was the average number sold to each settler. Of these lands 34,990 acres are in Southern Illinois, and south of the Terre Haute and Alton railroad. At the end of the year 457,779.17 acres of land remained unsold.

INTERNATIONAL EXHIBITION AT GRATZ, AUSTRIA.—We are informed through the State Department that, in celebration of the anniversary of the organization of the Agricultural Society at Gratz, in Styria, Austria, it is proposed to hold during the ensuing autumn an international exposition, to which all agricultural and industrial products will be admitted, as well as objects relating to the fine arts, the sciences, &c. The exposition will be followed by a distribution of medals and premiums.

CHEESE FACTORY IN AUSTRALIA.—An American cheese factory has been established near Alansford, Victoria, Australia, and is the first of the kind opened in the colonies. The present apparatus has a daily capacity to convert three hundred and eighty gallons of milk into cheese, on the factory plan. Cheese from the milk of five hundred cows can be made by three hands; whereas, on the ordinary system, it would require four hands to make cheese from one hundred cows. The owners take the milk to the factory, and receive a minimum of four pence—equal to eight cents, in summer, and four and a half pence, equal to nine cents per gallon, in winter—and have a guarantee that the price of milk per gallon shall never fall below two-thirds the price of cheese per pound. The price of cheese in Melbourne ranges from twelve to eighteen cents per pound.

METEOROLOGY.

COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY THE OBSERVERS OF THE SMITHSONIAN INSTITUTION.

NOTE.—Observers are respectfully solicited to send their reports as early after the close of the month as possible, with means duly made out, and names of station and observer filled in. The following tables are from reports received up to June 18; many unsightly gaps will be noticed. Those received later can be used in the annual report and by the Smithsonian Institution, but they are desired for our monthly also.

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and amount of rain-fall, (in inches and tenths,) for April and May, 1870, at the stations named. Daily observations at 7 a. m., and 2 and 9 p. m.

| States and stations. | APRIL, 1870. | | | | | | MAY, 1870. | | | | | |
|-----------------------|--------------|------------|-------|------------|------------|-----------------------|------------|------------|--------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| MAINE. | | | | | | | | | | | | |
| Houlton..... | 28 | 72 | 1 | 20 | 45.0 | 1.70 | 30 | 96 | 4 | 32 | 51.9 | 1.90 |
| Steuben..... | 9, 26, 29 | 57 | 2 | 30 | 40.3 | 6.40 | 20 | 80 | 4 | 37 | ----- | ----- |
| Orono..... | 27 | 69 | 16 | 27 | 43.5 | 3.55 | 29 | 80 | 6 | 36 | 51.9 | 1.96 |
| Williamsburg..... | 28 | 72 | 16 | 26 | 41.1 | 4.50 | 30 | 83 | 10, 24 | 34 | 51.9 | 2.70 |
| W. Waterville..... | 24, 27, 28 | 70 | 3, 16 | 30 | 46.3 | 3.80 | 30 | 82 | 10 | 38 | 55.2 | 1.67 |
| Gardiner..... | 27 | 66 | 1 | 29 | 45.3 | 4.57 | 20 | 79 | 10 | 39 | 54.3 | 1.94 |
| Lisbon..... | 24 | 72 | 1 | 23 | 44.8 | 4.90 | 20 | 83 | 6 | 37 | 53.4 | 1.53 |
| Norway..... | 28 | 78 | 1 | 30 | 44.6 | 4.75 | 29 | 82 | 7 | 36 | 55.5 | 1.40 |
| Cornish..... | 28 | 79 | 1 | 29 | 44.6 | 6.28 | 15 | 81 | 7, 10 | 38 | 55.0 | 1.55 |
| Cornishville..... | 23 | 80 | 4 | 30 | 45.3 | 5.30 | 15, 20 | 82 | 7, 10 | 40 | 57.1 | 1.55 |
| Averages..... | ----- | ----- | ----- | ----- | 44.1 | 4.58 | ----- | ----- | ----- | ----- | 54.0 | 1.80 |
| NEW HAMPSHIRE. | | | | | | | | | | | | |
| Stratford..... | 27 | 72 | 1 | 25 | 43.6 | 2.22 | 30 | 86 | 5, 12 | 33 | 53.0 | 2.18 |
| Whitefield..... | 28 | 78 | 1 | 20 | 46.6 | 1.86 | 29 | 85 | 7 | 31 | 52.2 | 1.74 |
| Tamworth..... | 28 | 79 | 1 | 25 | 44.0 | 5.99 | 30 | 83 | 7 | 37 | 56.6 | 1.03 |
| Concord..... | 27, 28 | 76 | 1 | 31 | 46.6 | ----- | 15, 20 | 79 | 7 | 39 | 56.5 | ----- |
| Goffstown Center. | 28 | 87 | 4 | 30 | 46.7 | 5.04 | 16 | 87 | 7 | 37 | 59.4 | 3.17 |
| Averages..... | ----- | ----- | ----- | ----- | 45.5 | 3.78 | ----- | ----- | ----- | ----- | 55.6 | 2.03 |
| VERMONT. | | | | | | | | | | | | |
| Lunenburg..... | 27 | 68 | 4 | 25 | 43.3 | 2.50 | 30, 31 | 82 | 7 | 35 | 54.1 | 4.00 |
| North Craftsbury. | 14, 27 | 68 | 4 | 24 | 42.1 | 1.06 | 30 | 80 | 13 | 34 | 52.1 | 1.72 |
| Newport..... | 14 | 73 | 2, 4 | 30 | 45.5 | 1.20 | 19, 30 | 84 | 12 | 37 | 56.5 | 1.70 |
| East Bethel..... | 28 | 77 | 1 | 23 | 44.1 | 3.00 | 19, 30 | 85 | 2, 6 | 35 | 57.3 | 1.17 |
| Woodstock..... | 28 | 74 | 1 | 25 | 42.0 | 3.27 | 15, 16, 19 | 79 | 11, 12 | 39 | 54.1 | 1.88 |
| Near St. Alban's. | 14 | 71 | 2 | 29 | 46.2 | ----- | 30 | 82 | 12 | 40 | 56.5 | ----- |
| West Charlotte... | 14 | 75 | 2, 4 | 30 | 47.4 | 3.25 | 30 | 88 | 7 | 38 | 58.2 | 0.75 |
| Middlebury..... | 28 | 73 | 4 | 28 | 47.7 | 2.67 | 15 | 80 | 22 | 43 | 57.9 | 0.59 |
| Panton..... | 14 | 74 | 4 | 28 | 46.9 | 3.59 | 30 | 86 | 12 | 42 | 59.4 | 0.31 |
| Castleton..... | 28 | 75 | 4 | 30 | 47.2 | 3.75 | 15 | 82 | 2, 6 | 41 | 57.6 | 1.23 |
| Averages..... | ----- | ----- | ----- | ----- | 45.2 | 2.69 | ----- | ----- | ----- | ----- | 56.4 | 1.48 |

Table showing the range of the thermometer, &c., for April and May—Continued.

| States and stations. | APRIL, 1870. | | | | | | MAY, 1870. | | | | | |
|----------------------|--------------|------------|------------|------------|------------|-----------------------|------------|------------|--------------------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| MASSACHUSETTS. | | ° | | ° | ° | <i>In.</i> | | ° | | ° | ° | <i>In.</i> |
| Kingston | 27 | 73 | 3 | 30 | 43.9 | 6.07 | 15 | 86 | 17 | 39 | 53.6 | 3.25 |
| Topsfield | 14 | 80 | 1, 3, 4 | 32 | 45.8 | 5.84 | | | | | | |
| Newbury | 23 | 86 | 4 | 32 | 46.5 | | | | | | | |
| Lawrence | 23 | 79 | 4 | 31 | 42.1 | 7.44 | 15 | 81 | 9, 10, 11 | 40 | 55.3 | 1.49 |
| Milton | 23 | 81 | 3, 4 | 34 | 46.2 | 6.34 | 15 | 86 | 10, 11 | 42 | 57.8 | 2.80 |
| Cambridge | 23 | 82 | 3 | 32 | 49.9 | | 15 | 86 | 11, 17 | 43 | 58.8 | |
| North Billerica .. | 23 | 80 | 3, 4 | 32 | 47.0 | | 16 | 84 | 9, 11 | 40 | 57.9 | |
| New Bedford | 14 | 63 | 3 | 33 | 46.1 | 5.95 | 15 | 80 | 10, 11 | 42 | 54.4 | 3.39 |
| Worcester | 14 | 75 | 4 | 30 | 47.2 | 6.03 | 16 | 81 | 7, 11 | 41 | 57.1 | 2.40 |
| Mendon | 23 | 75 | 6 | 30 | 46.2 | 3.90 | 16 | 82 | 11 | 39 | 56.5 | 1.90 |
| Lunenburg | 23 | 81 | 4 | 31 | 47.1 | 7.80 | | | | | | |
| Amherst | 14 | 78 | 4 | 35 | 48.3 | 3.70 | 15, 16 | 82 | 11 | 43 | 58.3 | 1.72 |
| Richmond | 23 | 74 | 4, 12 | 30 | 48.2 | 8.40 | 19 | 90 | 8, 10 | 40 | 63.5 | 4.08 |
| Williams College. | 14 | 77 | 4 | 29 | 47.9 | 3.30 | 19 | 81 | { 2, 5, 6, 11 } | 42 | 58.2 | 1.27 |
| Hinsdale | 23 | 74 | 4 | 28 | 44.1 | 3.79 | 16 | 79 | 11 | 38 | 55.3 | 1.03 |
| Averages | | | | | 46.4 | 5.71 | | | | | 57.2 | 2.33 |
| RHODE ISLAND. | | | | | | | | | | | | |
| Newport | 20 | 59 | 3, 4 | 34 | 46.8 | 4.52 | 26 | 75 | 11 | 43 | 54.8 | 3.54 |
| CONNECTICUT. | | | | | | | | | | | | |
| Columbia | 23 | 75 | 3, 4, 5 | 32 | 49.3 | 4.63 | 16 | 92 | 11 | 43 | 60.2 | 1.16 |
| Middletown | 14 | 80 | 4, 6 | 33 | 49.2 | 5.41 | 16 | 89 | 7 | 42 | 59.5 | 1.59 |
| Southington | 14 | 78 | 4 | 33 | 50.2 | 5.61 | 16 | 85 | 11 | 42 | 59.6 | 1.31 |
| Colebrook | 23 | 76 | 3, 4 | 31 | 46.4 | 4.22 | 16 | 84 | 11 | 40 | 58.4 | 2.85 |
| Brookfield | 23 | 81 | 8, 9 | 32 | 46.4 | 3.30 | 15 | 86 | 2 | 40 | 59.2 | 3.50 |
| Averages | | | | | 48.3 | 4.63 | | | | | 59.4 | 2.08 |
| NEW YORK. | | | | | | | | | | | | |
| Moriches | 14 | 70 | 4 | 35 | 49.2 | 4.24 | 16 | 85 | 10, 11 | 47 | 59.2 | 2.38 |
| South Hartford .. | 14 | 78 | 4 | 32 | 50.3 | 1.85 | 15, 16 | 85 | 11, 22 | 49 | 61.0 | 0.65 |
| Fort Edward | 23 | 76 | 4 | 30 | 48.0 | | 15 | 82 | 11 | 43 | 59.0 | |
| Vassar College .. | 14, 15 | 80 | 4 | 30 | 50.7 | 2.41 | | | | | | |
| Garrison's | 14, 23 | 79 | 4 | 32 | 51.0 | 3.84 | 15, 16 | 85 | 10, 11 | 46 | 58.3 | 2.98 |
| Throg's Neck | 23 | 83 | 4, 5 | 34 | 51.0 | | 17 | 83 | 11 | 47 | 62.4 | |
| White Plains | 14, 15, 28 | 75 | 4 | 32 | 49.8 | | | | | | | |
| Cooper's Union .. | 23 | 79 | 4 | 33 | 52.0 | 5.61 | 16 | 83 | 11 | 47 | 62.8 | 3.08 |
| Columbia College. | 23 | 80 | 4 | 33 | 50.6 | 5.60 | | | | | | |
| Rutger's Fem.Col. | 22 | 86 | 1 | 35 | 53.8 | 3.91 | 15, 16 | 86 | 3, 11 | 48 | 67.4 | 2.55 |
| Flatbush | 23 | 81 | 5 | 30 | 50.1 | 4.18 | 16 | 85 | 10, 11 | 47 | 61.5 | 2.63 |
| Glasco | 24 | 80 | 4 | 35 | 49.6 | 7.27 | 15 | 93 | 4, 11 | 39 | 59.2 | 2.00 |
| Newburg | 14 | 80 | 4 | 30 | 52.9 | 3.12 | 15, 16 | 90 | 11 | 46 | 63.3 | 2.49 |
| Minaville | 14, 27 | 75 | 4 | 30 | 47.6 | 5.65 | 16 | 85 | 2 | 43 | 62.1 | 2.90 |
| Cooperstown | 23 | 78 | 4, 8, 10 | 29 | 47.0 | 2.36 | 19 | 84 | 2 | 40 | 59.2 | 1.94 |
| Bannerville | 9 | 83 | 3 | 25 | 46.1 | 9.50 | 16 | 84 | 30 | 30 | 58.3 | |
| Gouverneur | 14 | 73 | 1, 3, 4, 8 | 30 | 45.7 | 0.96 | 30 | 86 | 1 | 41 | 57.2 | 1.01 |
| North Hammond .. | 23 | 66 | 4 | 24 | 45.9 | 0.65 | | | | | | |

Table showing the range of the thermometer, &c., for April and May—Continued.

| States and stations. | APRIL, 1870. | | | | | | MAY, 1870. | | | | | |
|----------------------|--------------|------------|-------------|------------|------------|-----------------------|------------|------------|----------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| NEW YORK—CON. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Houssville | 14 | 76 | 4 | 26 | 45.6 | 1.39 | | | | | | |
| Leyden | 14, 27 | 68 | 4 | 23 | 45.3 | 1.75 | 19 | 77 | 12 | 42 | 56.7 | 1.29 |
| Utica | 27 | 80 | 5, 8 | 35 | 49.8 | 1.36 | 30 | 85 | 1 | 43 | 60.6 | 1.86 |
| South Trenton... | 24 | 70 | 3, 7, 9, 10 | 30 | 44.7 | 2.54 | 30 | 86 | 1 | 40 | 59.3 | 2.77 |
| Cazenovia | 15 | 77 | 4 | 30 | 46.8 | ..... | 19 | 82 | 1 | 40 | 58.8 | ..... |
| Oneida | 15, 27 | 78 | 4 | 33 | 49.6 | 2.41 | 19 | 83 | 2, 6, 12 | 45 | 60.2 | 3.36 |
| Depauville | 27 | 66 | 4 | 30 | 45.7 | 1.15 | 29 | 82 | 22 | 40 | 57.7 | 1.34 |
| Oswego | 14 | 75 | 4, 5 | 33 | 45.4 | 1.38 | 31 | 80 | 1 | 42 | 55.8 | 0.83 |
| Palermo | 14 | 77 | 4 | 30 | 46.9 | 1.50 | 19 | 84 | 1 | 42 | 58.5 | 0.30 |
| North Volney ... | 14 | 77 | 4 | 30 | 47.0 | ..... | 31 | 85 | 1 | 45 | 59.8 | ..... |
| Waterbury | 15 | 85 | 4 | 27 | 41.3 | ..... | 19 | 90 | 1 | 40 | 59.8 | ..... |
| Nichols | 24 | 83 | 4 | 30 | 47.5 | ..... | 19 | 89 | 2 | 41 | 60.0 | ..... |
| Newark Valley .. | 16, 25, 28 | 78 | 4, 8, 9, 10 | 30 | 46.6 | 2.50 | 19 | 85 | 2 | 37 | 60.0 | 3.10 |
| Himrods | 27 | 76 | 4 | 26 | 45.4 | 3.06 | 19 | 80 | 21 | 45 | 58.2 | 3.19 |
| Rochester | 27 | 76 | 5 | 33 | 48.0 | 2.75 | 16, 19 | 82 | 7, 12 | 46 | 61.2 | 0.78 |
| Little Genesee ... | 15 | 82 | 4, 8 | 27 | 45.6 | 2.49 | 19 | 87 | 2 | 36 | 56.0 | 1.42 |
| Suspension Bridge | 27 | 78 | 5 | 32 | 48.0 | 1.20 | 20 | 87 | 1 | 38 | 59.2 | 0.86 |
| Buffalo | 9 | 73 | 4 | 32 | 47.1 | 1.15 | 20 | 83 | 12 | 41 | 58.8 | 1.51 |
| Averages | | | | | 48.0 | 3.03 | | | | | 61.7 | 2.05 |
| NEW JERSEY. | | | | | | | | | | | | |
| Paterson | 28 | 85 | 4 | 33 | 52.2 | 5.64 | 16 | 88 | 10 | 47 | 62.8 | 2.96 |
| Newark | 28 | 81 | 5 | 31 | 51.1 | 7.60 | 16 | 82 | 1 | 43 | 60.4 | 2.00 |
| New Brunswick .. | 28 | 78 | 4 | 32 | ..... | 5.78 | 16 | 83 | 10, 11 | 47 | 59.6 | 3.00 |
| Trenton | 15 | 80 | 4 | 36 | 54.3 | 3.84 | 15 | 84 | 11 | 50 | 65.2 | 3.40 |
| Rio Grande | 15 | 82 | 5 | 31 | 49.7 | 5.00 | 16 | 87 | 12, 17 | 49 | 61.3 | 9.50 |
| Moorestown | 15 | 82 | 4 | 33 | 50.3 | 6.80 | 16 | 83 | 5 | 46 | 61.5 | 6.59 |
| New Germantown .. | 28 | 83 | 4 | 33 | 50.8 | 5.32 | 16 | 86 | 11 | 47 | 61.2 | 2.99 |
| Readington | | | | | | | 16 | 86 | | | 67.7 | ..... |
| Haddonfield | 28 | 84 | 4 | 34 | 51.0 | 5.67 | 16, 21 | 82 | 11 | 48 | 61.1 | 4.74 |
| Newfield | 15 | 86 | 4 | 32 | 51.3 | ..... |  |  |  |  |  |  |
| Greenwich | 28 | 81 | 4, 5 | 35 | 51.9 | 5.70 | 16 | 80 | 3 | 50 | 62.7 | 7.40 |
| Vineland | 15, 28 | 84 | 4 | 33 | 51.2 | 5.07 | 25 | 88 | 5 | 46 | 63.8 | 8.45 |
| Averages | | | | | 51.4 | 5.58 | | | | | 62.5 | 5.10 |
| PENNSYLVANIA. | | | | | | | | | | | | |
| Nyces | 27 | 78 | 5 | 30 | 46.1 | 4.71 | 16 | 82 | 11 | 44 | 58.0 | 2.00 |
| Hamilton | 24 | 76 | 4 | 31 | 48.5 | 4.25 | 16 | 84 | 11 | 45 | 64.1 | 1.70 |
| Dyberry | 27 | 81 | 8 | 26 | 46.3 | 3.00 | 15, 16 | 83 | 2 | 35 | 58.3 | 3.15 |
| Fallsington | 15 | 81 | 4, 5 | 35 | 51.0 | 4.10 | 16 | 85 | 11 | 49 | 63.3 | 3.70 |
| Philadelphia | 15 | 82 | 4 | 34 | 52.5 | 5.41 | 21 | 86 | 11 | 50 | 63.8 | 5.24 |
| Germantown, (M.) | 15, 28 | 83 | 6 | 33 | 48.9 | ..... | 21 | 88 | 27 | 50 | 65.3 | ..... |
| Do. (T.) | 15 | 82 | 4, 5 | 35 | 52.3 | 3.80 | 16 | 85 | 11 | 49 | 62.9 | 7.38 |
| Horsbam | 15, 28 | 80 | 4 | 34 | 50.9 | 6.98 | 16 | 80 | 11 | 47 | 57.0 | 8.43 |
| Plymouth Meet'g. | 15, 28 | 80 | 4 | 33 | 50.5 | 5.79 | 16 | 83 | 11 | 48 | 61.6 | 6.66 |
| White Hall | 15 | 82 | 8, 26 | 32 | 51.1 | ..... | 16 | 88 | 2 | 38 | 63.4 | ..... |
| Factoryville | 15 | 78 | 4 | 28 | 47.4 | 3.20 | 30 | 82 | 2 | 40 | 59.7 | 4.06 |
| Reading | 15 | 84 | 4 | 26 | 53.8 | 6.46 | 15, 16 | 86 | 3, 13 | 51 | 63.7 | 3.91 |

Table showing the range of the thermometer, &c., for April and May—Continued.

| States and stations. | APRIL, 1870. | | | | | | MAY, 1870. | | | | | |
|------------------------|----------------|------------|-----------|------------|------------|-----------------------|------------------------|------------|-------------------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| PENN'A—Con'd. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| West Chester | 15 | 84 | 4 | 32 | 53.1 | 6.45 | 21 | 85 | 11 | 46 | 62.0 | 5.25 |
| Parkersville | 15 | 80 | 4 | 34 | 50.4 | 6.27 | 16 | 85 | 3 | 46 | 62.1 | 3.90 |
| Ashland | 15 | 84 | 4 | 30 | 51.6 | 5.20 | 15 | 84 | 2 | 40 | 61.0 | ..... |
| Tamaqua | 15 | 83 | 7 | 28 | 47.8 | ..... | 16 | 84 | 1 | 35 | 59.5 | 4.30 |
| Ephrata | 28 | 84 | 5 | 34 | 52.4 | 5.72 | 16 | 86 | 12 | 42 | 62.4 | 3.50 |
| Mount Joy | 15 | 85 | 4, 5, 7 | 35 | 53.6 | ..... |  |  |  |  |  |  |
| Harrisburg | 15 | 84 | 4 | 32 | 53.5 | 4.46 | 15, 16 | 85 | 11 | 50 | 64.8 | 4.07 |
| Carlisle | 15 | 94 | 4 | 33 | 54.6 | 5.90 | | | | | | |
| Fountain Dale | { 14, 15, 28 } | 80 | 4 | 33 | 52.1 | 5.43 | | | | | | |
| Tioga | 24 | 84 | 3, 13, 26 | 28 | 48.4 | 8.65 | { 15, 16, 19, 20, 21 } | 84 | 2, 6 | 40 | 60.1 | 2.50 |
| Lewisburg | 15 | 81 | 4 | 32 | 51.0 | 4.74 | 15 | 84 | 11 | 46 | 62.1 | 3.19 |
| Grampian Hills | 15, 24 | 78 | 4 | 26 | 45.8 | 1.35 | 19 | 86 | 11 | 40 | 59.1 | 5.61 |
| Johnstown | 24 | 79 | 4, 8 | 28 | 48.8 | 2.38 | 19 | 86 | 2 | 34 | 61.0 | 4.50 |
| Franklin | 14, 24 | 82 | 8 | 28 | 50.6 | 2.60 | 19 | 88 | 1 | 45 | 63.1 | 3.82 |
| Pittsburgh | 14, 24 | 78 | 4, 8 | 35 | 52.1 | 3.50 | 19 | 87 | 1 | 47 | 64.7 | 3.00 |
| Connellsville | 14, 24 | 80 | 4 | 30 | 50.4 | ..... | 19 | 88 | { 10, 11, 13 } | 46 | 63.1 | ..... |
| Brownsville | 15 | 98 | 7, 8 | 35 | 54.0 | ..... | 24 | 88 | 2, 3 | 48 | 68.0 | ..... |
| New Castle | 15 | 76 | 8 | 28 | 51.6 | 2.60 | 19 | 85 | 11 | 42 | 65.3 | 5.20 |
| Beaver | 14 | 79 | 8 | 34 | 52.2 | 4.30 | 19 | 87 | 10 | 47 | 67.4 | 5.10 |
| Canonsburg | 24 | 87 | 4, 13 | 34 | 52.4 | 2.61 | 18, 19 | 89 | 2 | 43 | 64.3 | 3.41 |
| Averages | | | | | 50.8 | 4.61 | | | | | 62.5 | 4.31 |
| DELAWARE. | | | | | | | | | | | | |
| Milford | 28 | 90 | 4, 5 | 34 | 7.70 | ..... |  |  |  |  |  |  |
| MARYLAND. | | | | | | | | | | | | |
| Woodlawn | 15 | 84 | 4 | 31 | 51.5 | 6.05 | 16 | 85 | { 5, 11, 27, 28 } | 50 | 63.0 | 5.06 |
| Annapolis | 28 | 83 | 5 | 34 | 53.8 | 5.17 | 4 | 82 | 11, 12 | 52 | 65.3 | 5.33 |
| Frederick | 15 | 87 | 4, 5 | 40 | 56.6 | 5.44 | 16 | 88 | 1, 27, 28 | 56 | 68.2 | 5.06 |
| Mt. St. Mary's | 15 | 81 | 4 | 33 | 51.5 | 5.65 | 4, 21 | 83 | 11 | 47 | 62.6 | 4.37 |
| Averages | | | | | 53.4 | 5.58 | | | | | 64.8 | 4.96 |
| DIST. COLUMBIA. | | | | | | | | | | | | |
| Washington | 15 | 80 | 5 | 35 | 53.8 | 3.70 | 4, 16 | 81 | { 3, 11, 12, 28 } | 54 | 64.5 | 4.70 |
| VIRGINIA. | | | | | | | | | | | | |
| Johnsontown | 15, 28 | 78 | 5 | 36 | 52.9 | 3.00 | 24 | 81 | 5 | 52 | 63.7 | 5.70 |
| Hampton | 25 | 84 | 6 | 33 | 55.1 | 5.50 | 24 | 90 | 11 | 52 | 66.0 | 5.30 |
| Zuni Station | 15, 25 | 84 | 4, 5 | 40 | 56.6 | 3.61 | 24 | 88 | 12 | 48 | 67.2 | 7.59 |
| Bacon's Castle | 15 | 90 | 4 | 40 | 58.7 | 8.58 | 24 | 94 | 11 | 50 | 69.1 | 7.85 |
| Comora | 15 | 83 | 5 | 35 | 55.3 | 2.10 | 16 | 82 | 11 | 52 | 65.5 | 4.15 |
| Vienna, (B.) | 15 | 86 | 5, 6 | 34 | 55.0 | 5.50 | 21 | 88 | 11 | 48 | 66.1 | ..... |
| Do., (W.) | 15 | 86 | 4, 6 | 36 | 54.8 | 5.50 | 22 | 86 | 2 | 48 | 67.6 | 4.70 |
| Piedmont | 14 | 83 | 6 | 32 | 52.8 | 5.15 | 15 | 85 | 12 | 42 | 68.4 | 5.60 |
| Piedmont Station | 30 | 91 | 5 | 32 | 52.4 | 5.25 | 20 | 85 | 12 | 42 | 63.4 | 5.30 |
| Staunton | 23 | 80 | 4 | 34 | 52.7 | 3.92 | | | | | | |
| Lexington | 15, 23 | 86 | 4 | 38 | 55.7 | 4.51 | 21 | 91 | 14 | 48 | 66.1 | 5.40 |

Table showing the range of the thermometer, &c., for April and May—Continued.

| States and stations. | APRIL, 1870. | | | | | | MAY, 1870. | | | | | |
|----------------------|--------------|------------|--------|------------|------------|-----------------------|------------|------------|------------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| VIRGINIA—Con. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Lynchburg | 25 | 82 | 4 | 39 | 55.9 | ..... | 22 | 83 | 12 | 48 | 66.6 | 2.75 |
| Snowville | 23 | 82 | 8 | 29 | 50.5 | 5.40 | 23 | 88 | 12 | 35 | 60.4 | 3.60 |
| Near Wytheville. | 24 | 80 | 5 | 36 | 52.5 | 2.80 | 23 | 84 | 12 | 40 | 61.5 | 2.30 |
| Averages | | | | | 54.4 | 4.68 | | | | | 65.5 | 5.02 |
| WEST VIRGINIA. | | | | | | | | | | | | |
| Cabell C. H. | 15 | 84 | 3 | 35 | 54.8 | 1.10 | 30 | 91 | 11, 12 | 38 | 68.2 | 0.50 |
| NORTH CAROLINA. | | | | | | | | | | | | |
| Kenansville | 23 | 87 | 5 | 35 | 60.6 | ..... | 22 | 97 | 12 | 48 | 69.2 | ..... |
| Goldsboro | 23, 25 | 91 | 5, 18 | 40 | 61.5 | 3.15 | 22 | 94 | 12 | 51 | 71.3 | 4.85 |
| Warrenton | 25 | 84 | 4, 5 | 38 | 55.3 | 2.40 | 17, 24 | 86 | 11, 12 | 48 | 65.5 | 4.30 |
| Oxford | 25 | 88 | 5 | 40 | 57.8 | 3.35 | 22 | 86 | 3 | 50 | 66.6 | 9.75 |
| Chapel Hill | 23, 29 | 89 | 18 | 35 | 59.7 | ..... | 22 | 92 | 10, 11, 13 | 50 | 69.1 | ..... |
| Albemarle | 25 | 90 | 18 | 34 | 57.6 | 4.02 | 5 | 92 | 13, 14 | 44 | 65.4 | 6.72 |
| Statesville | 23 | 89 | 4, 7 | 32 | 54.0 | 2.50 | 17, 21 | 88 | 14 | 42 | 63.8 | 4.50 |
| Asheville, (A.) .. | 24 | 81 | 17 | 32 | 54.3 | 2.80 | 22 | 86 | 10 | 45 | 63.0 | 6.70 |
| Do....(H.) | 23, 24 | 76 | 6 | 30 | 52.1 | ..... | 21, 22 | 82 | 12 | 36 | 61.2 | ..... |
| Averages | | | | | 57.0 | 3.04 | | | | | 66.1 | 6.14 |
| SOUTH CAROLINA. | | | | | | | | | | | | |
| Aiken | 24, 25 | 91 | 18 | 34 | 64.8 | ..... |  |  |  |  |  |  |
| Holland's Store .. | 24 | 93 | 5 | 38 | 65.2 | 2.10 | | | | | | |
| Gowdeysville | 25 | 90 | 5, 18 | 38 | 62.9 | 3.82 | | | | | | |
| Bluffton | 25 | 91 | 18 | 40 | 63.4 | 2.30 | 17 | 92 | 2 | 60 | 74.3 | 2.70 |
| Fort Mill | 25 | 84 | 18 | 38 | 62.2 | ..... | 21 | 90 | 12 | 52 | 70.3 | ..... |
| Averages | | | | | 63.7 | 2.74 | | | | | 72.3 | 2.70 |
| GEORGIA. | | | | | | | | | | | | |
| Berne | 24 | 86 | 6 | 39 | 61.9 | 0.38 | 17 | 90 | 1 | 56 | 71.6 | 1.20 |
| St. Mary's | | | | | | | 17 | 88 | 15 | 60 | 73.0 | ..... |
| Penfield | 25 | 90 | 18 | 39 | 61.1 | 2.05 | 22 | 93 | 13 | 52 | 71.2 | 1.40 |
| Atlanta | 25 | 85 | 17, 18 | 32 | 55.2 | 2.82 | 21, 22, 23 | 92 | 10, 11, 12 | 50 | 65.4 | 0.62 |
| Columbus | 24 | 83 | 18 | 36 | 62.8 | ..... |  |  |  |  |  |  |
| Averages | | | | | 60.3 | 1.75 | | | | | 70.3 | 1.09 |
| ALABAMA. | | | | | | | | | | | | |
| Rockville | 24 | 87 | 18 | 34 | 59.5 | 1.13 | 24 | 94 | 11, 13 | 53 | 69.7 | 1.82 |
| Carlowville | 26 | 86 | 17, 18 | 40 | 63.3 | 2.84 | 22, 23 | 96 | 11 | 60 | 76.1 | 0.73 |
| Selma | 26 | 85 | 18 | 38 | 63.2 | 2.15 | 21 | 97 | 9 | 56 | 75.0 | 0.55 |
| Greene Springs .. | 30 | 84 | 18 | 33 | 60.1 | 2.76 | | | | | | |
| Coatopa | 22, 23, 24 | 85 | 17 | 38 | 61.2 | 3.00 | 22 | 97 | 12 | 51 | 72.8 | 1.00 |
| Fish River | 23 | 80 | 17 | 40 | ..... | ..... | 30 | 87 | 17 | 63 | ..... | 1.00 |
| Averages | | | | | 61.5 | 2.33 | | | | | 73.4 | 1.04 |
| FLORIDA. | | | | | | | | | | | | |
| Port Orange | 16 | 86 | 18 | 44 | 64.0 | ..... |  |  |  |  |  |  |
| St. Augustine | | | | | | | 5, 17, 18 | 90 | 23 | 60 | 76.2 | ..... |

Table showing the range of the thermometer, &c., for April and May—Continued.

| States and stations. | APRIL, 1870. | | | | | | MAY, 1870. | | | | | |
|------------------------|--------------|------------|---------------|------------|------------|-----------------------|------------|------------|------------------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| FLORIDA—Cont'd. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Jacksonville | 25 | 91 | 18 | 39 | 67.2 | 3.20 | 17 | 95 | 15 | 60 | 75.7 | 1.50 |
| Pilatka | 24, 25 | 94 | 18 | 38 | 67.9 | 1.38 | | | | | | |
| Ocala | 26 | 92 | 5, 6, 7, 18 | 40 | 63.4 | ..... | 17 | 96 | 10 | 55 | 71.4 | ..... |
| Orange Grove | 28 | 85 | 5 | 50 | 67.7 | 2.30 | | | | | | |
| Newport | | | | | | | 18 | 94 | 14 | 58 | 74.2 | 1.29 |
| Manatee | 27 | 88 | 5 | 52 | 69.7 | 1.70 | | | | | | |
| Chattahoochee | | | | | | | 19 | 99 | 7 | 47 | | |
| Averages | | | | | 66.7 | 2.15 | | | | | 76.9 | 1.40 |
| TEXAS. | | | | | | | | | | | | |
| Gilmer | 12 | 88 | 1 | 40 | 65.4 | 6.41 | 21 | 92 | 12 | 57 | 74.0 | 2.65 |
| Houston | 8 | 90 | 15 | 41 | 62.3 | ..... | 1 | 90 | 26 | 58 | 73.6 | ..... |
| Palestine | 12 | 88 | 15, 16, 17 | 44 | 67.5 | 7.25 | | | | | | |
| Oakland | 8 | 92 | 16 | 47 | 73.7 | 9.05 | 25 | 94 | 15 | 63 | 76.7 | 1.25 |
| Blue Branch | 8 | 88 | 15, 16 | 40 | 66.0 | ..... | 25, 26 | 89 | 25 | 59 | 73.4 | 8.80 |
| Lavacca | 8 | 80 | 16 | 46 | 70.2 | 0.50 | 25, 26, 27 | 90 | 3 | 68 | 76.3 | 0.20 |
| Clinton | 8 | 89 | 1, 15 | 48 | 68.3 | 3.15 | 26 | 95 | 1 | 66 | 77.5 | 0.10 |
| Austin | 8 | 88 | 15 | 42 | 67.6 | 2.74 | 25, 26 | 94 | 12 | 63 | 75.2 | 6.98 |
| Lockhart | 12, 18 | 83 | 16 | 42 | 68.5 | ..... | 28, 29 | 92 | 7 | 60 | 75.1 | ..... |
| Averages | | | | | 67.7 | 4.85 | | | | | 75.2 | 3.33 |
| LOUISIANA. | | | | | | | | | | | | |
| New Orleans | 13 | 84 | 1 | 46 | 64.0 | 3.75 | 22 | 92 | 9 | 61 | 73.0 | 1.90 |
| Shreveport | 12 | 86 | 1 | 37 | 63.5 | ..... | 20, 21 | 92 | 15 | 56 | 75.3 | ..... |
| Near Cheneyville | 12 | 82 | 16 | 32 | 67.2 | ..... | 22 | 92 | 12 | 56 | 78.2 | ..... |
| Averages | | | | | 64.9 | 3.75 | | | | | 75.5 | 1.90 |
| MISSISSIPPI. | | | | | | | | | | | | |
| Columbus | 22 | 82 | 18 | 37 | 60.7 | 3.13 | 22 | 92 | 11 | 52 | 71.9 | 6.10 |
| Enterprise | 25 | 91 | 5, 17 | 33 | 61.2 | 3.60 | | | | | | |
| Philadelphia | 13 | 81 | 18 | 36 | 61.1 | 2.50 | 22 | 90 | 8, 12 | 54 | 70.8 | 1.70 |
| Brookhaven | 13 | 80 | 16 | 39 | 60.7 | 6.20 | 23 | 91 | 12 | 48 | 71.4 | 1.30 |
| Near Brookhaven | 14, 26 | 86 | 4, 16, 17 | 40 | 61.8 | 5.40 | 23 | 97 | 12 | 50 | 72.0 | 2.30 |
| Natchez | 13, 14 | 77 | 16 | 36 | 61.0 | 4.05 | 21, 22, 23 | 83 | 8, 9, 12, 13, 15 | 60 | 73.1 | 0.82 |
| Averages | | | | | 61.1 | 4.15 | | | | | 71.8 | 2.44 |
| ARKANSAS. | | | | | | | | | | | | |
| Helena | 13, 21, 22 | 84 | 16 | 33 | 61.3 | ..... | 23 | 93 | 7 | 52 | 71.8 | ..... |
| TENNESSEE. | | | | | | | | | | | | |
| Elizabethton | 26, 27 | 88 | 5 | 30 | 53.9 | 4.90 | 21 | 96 | 14 | 42 | 65.9 | 4.45 |
| Tusculum Coll'ge | 24 | 80 | 5 | 36 | 54.5 | 2.10 | | | | | | |
| McMinnsville | | | | | | | 23 | 90 | 15 | 50 | | |
| Knoxville | 22 | 83 | 6 | 33 | 55.7 | 5.40 | | | | | | |
| Lookout Mount'n | 24 | 83 | 17 | 31 | 57.4 | ..... | 23 | 90 | 7 | 50 | 68.8 | ..... |
| Austin | 22, 23, 24 | 86 | 6, 17, 18, 19 | 34 | 57.3 | 3.25 | 23 | 94 | 13 | 46 | 68.5 | 2.78 |

Table showing the range of the thermometer, &c., for April and May—Continued.

| States and stations. | APRIL, 1870. | | | | | | MAY, 1870. | | | | | |
|-----------------------|--------------------|------------|-----------|------------|------------|-----------------------|----------------|------------|-----------------------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| TENNESSEE—Con. | | | | | | | | | | | | |
| | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Clarksville..... | 22 | 85 | 17 | 30 | 56.7 | 2.66 | 22 | 88 | 11 | 47 | 65.8 | 3.76 |
| Trenton..... | 22, 24 | 84 | 17, 18 | 31 | 59.6 | 2.00 | 22 | 95 | 13 | 46 | 70.2 | 4.70 |
| Averages..... | | | | | 56.4 | 3.39 | | | | | 67.8 | 3.92 |
| KENTUCKY. | | | | | | | | | | | | |
| Pine Grove..... | 24 | 82 | 4, 5 | 32 | 53.7 | 3.93 | 23 | 90 | { 8, 10, 11, 12, 13 } | 50 | 66.2 | 3.59 |
| Danville..... | 24 | 90 | 17, 18 | 38 | 58.1 | 2.99 | 23 | 95 | 11, 12 | 52 | 69.9 | 4.18 |
| Shelby City..... | 24 | 86 | 5, 17 | 34 | 55.9 | 2.88 | 23 | 90 | 10, 12 | 50 | 67.9 | 3.45 |
| Near Louisville.. | 24 | 85 | 4 | 32 | 53.1 | 3.64 | 22 | 93 | 11 | 43 | 66.3 | 4.71 |
| Averages..... | | | | | 55.2 | 3.46 | | | | | 67.6 | 3.98 |
| OHIO. | | | | | | | | | | | | |
| Salem..... | 24 | 80 | 5 | 34 | 52.9 | 2.55 | 19 | 90 | 10, 13 | 52 | 65.7 | 2.40 |
| Steubenville..... | 14 | 77 | 8 | 36 | 55.0 | 2.78 | 19, 21 | 84 | 1, 2 | 50 | 67.6 | 3.04 |
| Painesville..... | 24 | 79 | 4 | 30 | 49.3 | 5.38 | 18, 21 | 82 | 11 | 45 | 62.6 | 3.06 |
| Gilmore..... | 14, 24 | 80 | 4 | 34 | 49.4 | ..... | 18 | 94 | { 10, 11, 12, 13 } | 48 | 68.2 | 4.20 |
| Milnersville..... | 14 | 80 | 4 | 27 | ..... | ..... | 20 | 86 | 13 | 40 | ..... | ..... |
| Cleveland..... | 14, 24 | 82 | 3, 4 | 32 | 48.3 | 4.38 | 3 | 84 | { 10, 11, 12, 13 } | 45 | 60.1 | 1.85 |
| Pennsville..... | | | | | | | 23 | 87 | 14 | 50 | 69.1 | ..... |
| Oberlin..... | 24 | 80 | 3 | 30 | 48.7 | 2.10 | 18 | 88 | 12 | 43 | 67.7 | 1.35 |
| Kelley's Island.. | 14 | 74 | 3, 4, 17 | 36 | 48.4 | 1.89 | 18 | 84 | 7, 8 | 51 | 63.9 | 1.27 |
| Sandusky..... | 24 | 81 | 3, 4 | 36 | 49.7 | 2.52 | 18 | 85 | 11, 29 | 50 | 71.7 | 2.17 |
| North Fairfield.. | 24 | 84 | 3 | 33 | 51.6 | 1.73 | 3, 18 | 84 | 13 | 46 | 64.2 | 2.63 |
| Gambier..... | 24 | 76 | 4, 6 | 34 | 49.8 | 0.56 | 23 | 84 | 10, 12 | 40 | 68.0 | 1.15 |
| Westerville..... | 24 | 85 | 17 | 34 | 52.6 | 1.14 | 18, 19 | 89 | 10 | 46 | 66.7 | 0.77 |
| Williamsport.... | 24 | 85 | 2 | 27 | 53.6 | 3.70 | 20 | 93 | 1 | 43 | 69.8 | 1.83 |
| N. Bass Island... | 27 | 80 | 4, 5 | 35 | 47.5 | 1.58 | 16 | 87 | 7 | 51 | 63.0 | 1.57 |
| Marion..... | 24 | 80 | 4 | 31 | 50.2 | 1.63 | 18 | 87 | 13 | 46 | 68.8 | 1.36 |
| Hillsboro'..... | 24 | 78 | 4 | 33 | 52.3 | 2.78 | 23 | 86 | 10, 11 | 47 | 65.1 | 1.88 |
| Toledo..... | { 14, 23, 24, 27 } | 81 | 4 | 31 | 50.8 | 2.00 |  |  |  |  |  | ..... |
| Bowling Green... | 24 | 86 | 4 | 32 | 53.1 | 3.30 | 3 | 91 | 10, 12 | 48 | 65.9 | 1.90 |
| Kenton..... | 28 | 66 | 4, 18 | 36 | 47.2 | 2.55 | 23 | 90 | 1, 4 | 50 | 68.1 | 1.35 |
| Urbana Univ..... | 24 | 84 | 4, 17 | 32 | 53.8 | 1.14 | 18 | 89 | 12 | 46 | 65.6 | 0.68 |
| Springfield..... | 24 | 84 | 16, 17 | 35 | 54.4 | 1.60 | 21 | 89 | 8, 11 | 50 | 68.7 | 0.45 |
| Bethel..... | 24 | 83 | 4, 5 | 33 | 52.4 | 2.75 | 23 | 91 | 13 | 47 | 65.9 | 2.25 |
| Jacksonburg..... | 24 | 84 | 4, 17 | 32 | 54.1 | 1.15 | { 18, 21, 22 } | 88 | 10, 13 | 46 | 67.2 | 0.40 |
| Mt. Auburn Inst. | 24 | 82 | 4, 17 | 34 | 55.5 | 1.33 | 22 | 88 | { 10, 11, 12 } | 51 | 71.0 | 1.82 |
| Cincinnati, (H.).. | 24 | 84 | 4, 17 | 34 | 54.4 | 1.59 | 22 | 92 | 11 | 49 | 68.0 | 1.74 |
| Do (P.)..... | 24 | 84 | 18 | 35 | 55.5 | 1.42 | 23 | 94 | 11 | 50 | 70.7 | 1.90 |
| College Hill..... | 23, 24 | 84 | 4, 5 | 31 | 54.0 | 2.38 | 22, 23 | 90 | 9, 10 | 50 | 71.2 | 1.13 |
| Averages..... | | | | | 51.7 | 2.24 | | | | | 67.1 | 1.77 |
| MICHIGAN. | | | | | | | | | | | | |
| Detroit..... | 24 | 82 | 4 | 33 | 49.7 | 0.96 | 16, 31 | 86 | 9 | 46 | 62.5 | 1.26 |
| Monroe City..... | { 14, 24, 27 } | 82 | 17 | 35 | 52.8 | 1.03 | 16 | 89 | 12 | 48 | 64.7 | 1.71 |
| Ann Arbor..... | | | | | | | 3, 18 | 85 | 12 | 47 | 62.9 | 1.70 |
| Adrian..... | 24, 27 | 82 | 4, 16, 17 | 29 | 45.3 | 5.94 | 3 | 90 | 12, 24 | 42 | 59.1 | 6.71 |

Table showing the range of the thermometer, &c., for April and May—Continued.

| States and stations. | APRIL, 1870. | | | | | | MAY, 1870. | | | | | |
|--------------------------|--------------------|------------|------------|------------|------------|-----------------------|------------|------------|-----------------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| MICHIGAN—Con'd. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Alpena | 23, 26 | 54 | 3 | 29 | 40.1 | 1.84 | 19 | 76 | { 1, 6, 7, 11 } | 42 | 52.3 | 1.73 |
| State Ag'l College | 23, 27 | 83 | 4, 5 | 30 | 50.4 | 2.02 | 14 | 88 | 24 | 44 | 64.3 | 1.16 |
| Litchfield | 24 | 82 | 16 | 27 | 50.5 | 2.58 | 18 | 89 | 8 | 46 | 62.3 | 2.30 |
| Coldwater | 24 | 84 | 7, 16, 17 | 26 | 49.4 | 2.38 | 18 | 87 | 13 | 40 | 61.7 | 1.31 |
| Gra'd Rapids, (H.) | 27 | 82 | 16, 17 | 30 | 51.5 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Do. (S.) | 27 | 77 | 16 | 30 | 49.8 | 1.88 | ..... | ..... | ..... | ..... | ..... | ..... |
| Northport | 14 | 81 | 8 | 30 | 45.0 | 3.88 | 15 | 82 | 9, 24 | 44 | 57.5 | 3.63 |
| Benzonia | 23 | 72 | 5 | 26 | 45.1 | ..... | 31 | 92 | 8, 12 | 42 | 60.1 | ..... |
| Muskegon | 27 | 80 | 5 | 30 | 54.5 | ..... | 17 | 90 | 9 | 48 | 68.1 | 1.00 |
| Otsego | { 13, 14, 22, 26 } | 85 | 4, 5, 7 | 30 | 53.6 | ..... | 15 | 98 | 10 | 42 | 66.7 | ..... |
| Copper Falls ..... | ..... | ..... | ..... | ..... | ..... | ..... | 30 | 79 | 16 | 36 | 55.5 | 0.90 |
| Ontonagon | 12 | 72 | 2, 3, 4, 8 | 30 | 43.4 | ..... | 30, 31 | 90 | 16, 25 | 46 | 58.4 | ..... |
| Averages ..... | ..... | ..... | ..... | ..... | 43.7 | 2.50 | ..... | ..... | ..... | ..... | 61.2 | 2.13 |
| INDIANA. | | | | | | | | | | | | |
| Aurora | 24 | 88 | 4, 5, 17 | 32 | 54.7 | 1.92 | ..... | ..... | ..... | ..... | ..... | ..... |
| Vevay | 23 | 86 | 5 | 31 | 55.4 | 2.37 | 22 | 90 | 9 | 46 | 66.8 | 2.37 |
| Mount Carmel ... | 24 | 82 | 18 | 32 | 52.7 | 1.83 | 22 | 87 | 9 | 45 | 65.7 | 1.00 |
| Muncie | 24 | 84 | 16 | 29 | 53.3 | 1.60 | 5, 17, 22 | 88 | 11 | 44 | 66.5 | 1.85 |
| Spiceland | 24 | 84 | 17 | 31 | 53.1 | 1.59 | 22 | 94 | { 10, 11, 12 } | 45 | 67.6 | 0.51 |
| Laconia | 24 | 87 | 17 | 32 | 56.5 | 2.78 | 22 | 92 | 10 | 46 | 66.1 | 6.50 |
| Columbia City ... | 24 | 85 | 17 | 24 | 53.3 | 2.31 | 18 | 90 | 10 | 48 | 67.5 | ..... |
| Knightstown ... | 24 | 86 | 17 | 31 | 53.1 | 1.66 | 22 | 91 | 12 | 45 | 67.5 | 0.85 |
| Indianapolis | 24 | 82 | 16 | 31 | 53.4 | 1.94 | 22 | 90 | 12 | 42 | 67.3 | 0.56 |
| Near La Porte ... | { 13, 24, 27 } | 84 | 16 | 29 | 52.5 | 5.45 | 17 | 94 | 11 | 45 | 67.4 | 0.65 |
| Rensselaer | 23, 27 | 82 | 16 | 30 | 53.2 | 1.25 | ..... | ..... | ..... | ..... | ..... | ..... |
| Merom | 23 | 82 | 16 | 31 | 55.6 | 1.13 | 22 | 88 | 12 | 45 | 68.5 | 1.60 |
| New Harmony ... | 23 | 86 | 17 | 33 | 56.7 | 2.72 | 22 | 91 | 11 | 50 | 68.4 | 1.72 |
| Harveysburg | 23 | 80 | 17 | 24 | 53.1 | 2.40 | 22 | 88 | { 10, 11, 29 } | 40 | 60.7 | 1.70 |
| Averages ..... | ..... | ..... | ..... | ..... | 54.0 | 2.21 | ..... | ..... | ..... | ..... | 66.2 | 1.61 |
| ILLINOIS. | | | | | | | | | | | | |
| Chicago | 13 | 80 | 16 | 33 | 52.2 | 1.15 | 3, 15 | 85 | 7, 11 | 47 | 65.5 | 0.80 |
| Near Chicago | 24 | 82 | 16 | 28 | 45.5 | ..... | 3 | 88 | 10 | 42 | 61.1 | ..... |
| Evanston | 13 | 79 | 16 | 33 | 47.1 | 1.90 | ..... | ..... | ..... | ..... | ..... | ..... |
| Marengo | 24 | 86 | 17 | 24 | 49.8 | 1.37 | 16, 31 | 88 | 10 | 42 | 63.6 | 0.54 |
| Charleston | 23 | 86 | 16 | 31 | 54.0 | 1.92 | 22 | 89 | 10, 12 | 45 | 66.2 | 2.63 |
| Mattoon | { 13, 14, 23 } | 80 | 5, 16, 17 | 32 | 53.4 | 1.63 | 22 | 85 | 12 | 45 | 66.9 | 2.63 |
| Aurora | 24 | 83 | 16 | 29 | 50.9 | 1.58 | 3 | 86 | 11, 12 | 46 | 64.5 | 1.35 |
| Louisville | 23, 24 | 88 | 4, 5 | 32 | 56.8 | 2.50 | 21, 22 | 92 | 12 | 40 | 69.5 | 3.00 |
| Golconda | 24 | 92 | 18 | 26 | 55.9 | 3.80 | 17, 22 | 97 | 7 | 40 | 64.7 | 2.00 |
| Belvidere | 23 | 86 | 16 | 27 | 51.7 | 0.69 | 17 | 91 | 7, 9, 11 | 46 | 65.2 | 1.10 |
| Sandwich | 23 | 85 | 4, 16 | 31 | 52.1 | 2.20 | ..... | ..... | ..... | ..... | ..... | ..... |
| Ottawa | 24 | 87 | 16 | 33 | 54.3 | 0.85 | 22 | 93 | 11 | 46 | 68.5 | 1.15 |
| Decatur | 23 | 86 | 5 | 31 | 53.4 | 1.30 | 18, 22 | 90 | 10 | 45 | 66.2 | 0.80 |
| Pana | 23 | 83 | 15, 17 | 32 | 54.9 | 0.90 | 22 | 90 | 12 | 46 | 67.0 | 0.90 |
| Winnebago | 24 | 85 | 16, 17 | 26 | 50.8 | 1.32 | 17 | 88 | 7, 10 | 45 | 65.4 | 1.25 |
| Rockelle | 23, 24 | 84 | 17 | 23 | 52.3 | ..... | 22 | 90 | 11, 12 | 43 | 63.4 | ..... |

Table showing the range of the thermometer, &c., for April and May—Continued.

| States and stations. | APRIL, 1870. | | | | | | MAY, 1870. | | | | | | |
|----------------------|--------------|------------|-----------|------------|------------|-----------------------|-------------------|------------|--------|------------|------------|-----------------------|------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | |
| ILLINOIS—Cont'd. | | ° | | ° | ° | In. | | ° | | ° | ° | In. | |
| Wyanet..... | 24 | 88 | 16, 17 | 26 | 51.0 | 0.60 | 22 | 90 | 8, 10 | 40 | 65.0 | 1.42 | |
| Tiskilwa..... | 13 | 86 | 16, 17 | 28 | 53.1 | ..... | 3, 22 | 90 | 6, 13 | 44 | 65.4 | ..... |  |
| Hennepin, (S.).... | 23 | 84 | 4 | 28 | 53.0 | ..... | 22 | 92 | 8, 10 | 40 | 61.0 | ..... |  |
| Do....(O.)..... | 23 | 89 | 4, 11, 16 | 30 | 55.8 | ..... | 22 | 93 | 10 | 44 | 63.6 | ..... |  |
| Peoria..... | 23 | 86 | 17 | 31 | 55.6 | 0.45 | 22 | 92 | 10 | 45 | 68.3 | 1.62 | |
| Springfield..... | | | | | | | 22 | 93 | 10, 12 | 46 | 67.9 | ..... |  |
| Dubois..... | 23 | 88 | 16, 17 | 32 | 53.9 | 2.93 | 21 | 92 | 11 | 42 | 67.2 | 2.53 | |
| Manchester..... | 21 | 96 | 16 | 28 | 55.2 | 1.95 | 16 | 86 | 12 | 45 | 66.2 | 1.59 | |
| Mount Sterling.. | 14 | 82 | 16 | 31 | 56.8 | 1.20 | 22 | 88 | 10 | 48 | 72.3 | 1.40 | |
| Andalusia..... | 23, 24 | 82 | 16, 17 | 29 | 52.6 | ..... | 22 | 86 | 28 | 46 | 65.8 | ..... |  |
| Augusta..... | 14 | 83 | 16, 17 | 29 | 55.8 | 0.63 | 3 | 87 | 10 | 47 | 64.5 | 1.73 | |
| Warsaw..... | 23 | 92 | 16 | 29 | 57.2 | 0.83 | 3 | 94 | 10 | 48 | 67.1 | 1.97 | |
| Averages..... | | | | | 53.2 | 1.48 | | | | | 65.8 | 1.60 | |
| WISCONSIN. | | | | | | | | | | | | | |
| Sturgeon Bay.... | 23 | 77 | 6 | 27 | 45.4 | 1.25 | 15 | 85 | 9, 24 | 43 | 59.4 | 2.40 | |
| Manitowoc..... | 23 | 70 | 16 | 31 | 46.8 | 0.58 | 19 | 81 | 10 | 44 | 58.3 | 2.45 | |
| Hingham..... | 14 | 78 | 16, 17 | 32 | 47.8 | ..... | 16 | 87 | 7, 11 | 40 | 61.3 | ..... |  |
| Milwaukee..... | 13 | 80 | 16, 17 | 28 | 47.0 | 0.51 | 3 | 88 | 8 | 41 | 59.4 | 0.63 | |
| Appleton..... | 14 | 74 | 16 | 33 | 51.0 | ..... | 3 | 80 | 25 | 46 | 63.4 | ..... |  |
| Geneva..... | 23 | 84 | 4 | 28 | 49.8 | 0.15 | 16 | 90 | 7 | 45 | 64.4 | 0.20 | |
| Waupacca..... | 14, 23 | 80 | 16, 17 | 30 | 51.8 | ..... | 3, 15 | 87 | 25 | 47 | 65.1 | ..... |  |
| Embarrass..... | 14 | 82 | 4 | 27 | 48.6 | 0.81 | 1 | 84 | 26 | 44 | 61.3 | 4.52 | |
| Rocky Run..... | 13 | 83 | 16 | 28 | 51.8 | 0.16 | 17 | 88 | 10 | 46 | 65.5 | 2.50 | |
| Madison..... | 23 | 79 | 16 | 25 | 49.7 | 0.19 | 17 | 85 | 10 | 45 | 64.7 | 1.09 | |
| Edgerton..... | 23 | 89 | 17 | 30 | 54.3 | ..... | 30 | 96 | 10 | 48 | 68.4 | 0.50 | |
| Mosinee..... | 13, 14, 23 | 78 | 4 | 25 | 46.5 | 2.70 | 3 | 86 | 8, 9 | 41 | 59.6 | 11.30 | |
| Baraboo..... | 23 | 86 | 4, 17 | 26 | 49.9 | 0.75 | 3 | 92 | 8 | 32 | 67.2 | 8.88 | |
| New Lisbon..... | 23 | 86 | 16 | 20 | 51.2 | ..... | 3 | 90 | 9 | 46 | 64.1 | ..... |  |
| Bayfield..... | 22 | 72 | 4 | 24 | 40.8 | ..... | 14 | 84 | 12, 16 | 38 | 54.6 | ..... |  |
| Averages..... | | | | | 48.8 | 0.79 | | | | | 62.4 | 3.45 | |
| MINNESOTA. | | | | | | | | | | | | | |
| Afton..... | 23 | 87 | 4 | 24 | 50.1 | 1.10 | 17 | 88 | 9 | 46 | 66.1 | 5.20 | |
| St. Paul..... | 13, 23 | 83 | 15 | 27 | 51.2 | 1.38 | 17 | 89 | 9 | 47 | 65.0 | 5.24 | |
| Minneapolis..... | 23 | 84 | 15 | 23 | 49.3 | 1.04 | 3 | 91 | 9 | 44 | 62.8 | 3.95 | |
| Sibley..... | 23 | 80 | 15 | 18 | 50.4 | 0.17 | 3 | 85 | 10 | 43 | 69.1 | 2.78 | |
| Koniska..... | 13 | 82 | 15 | 19 | 48.4 | 0.40 | 27 | 85 | 24 | 40 | 61.9 | 3.20 | |
| New Ulm..... | 23 | 82 | 15 | 19 | 50.5 | 0.56 | 3, 17, 30 | 86 | 12 | 44 | 64.6 | 3.70 | |
| Madelia..... | 23 | 85 | 15 | 18 | 50.4 | 1.31 | 30 | 90 | 9 | 44 | 66.1 | 5.61 | |
| Averages..... | | | | | 50.0 | 0.85 | | | | | 65.1 | 4.24 | |
| IOWA. | | | | | | | | | | | | | |
| Clinton..... | 24 | 85 | 16, 17 | 28 | 51.1 | 0.50 | 21 | 86 | 10, 11 | 40 | 63.9 | 3.25 | |
| Waukon..... | 23 | 84 | 16 | 22 | 50.5 | ..... | 4, 17 | 86 | 10 | 43 | 63.1 | ..... |  |
| Dubuque..... | 13, 24 | 82 | 16 | 28 | 52.9 | 0.40 | { 3, 16, 17, 22 } | | 87 | 9 | 48 | 67.0 | 3.71 |

Table showing the range of the thermometer, &c., for April and May—Continued.

| States and stations. | APRIL, 1870. | | | | | | MAY, 1870. | | | | | |
|----------------------|-----------------------|------------|------------|------------|------------|-----------------------|-----------------------|------------|--------------------------------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| IOWA—Cont'd. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Monticello | 24 | 89 | 16, 17 | 26 | 53.4 | 1.05 | 30 | 90 | { 8, 9, 10, 11 } | 50 | 67.8 | 4.11 |
| Bowen's Prairie.. | 23, 24 | 86 | 16 | 24 | 52.5 | 1.50 | 16, 17, 30 | 88 | { 8, 9, 10, 11, 12, 13 } | 46 | 64.7 | 4.00 |
| Fort Madison.... | 24 | 84 | 17 | 26 | 53.7 | 0.91 | 22 | 90 | 12 | 41 | 66.9 | 1.53 |
| Guttenberg | 23 | 88 | 16 | 23 | 49.1 | ..... | 17 | 91 | 9 | 42 | 66.8 | ..... |
| Mount Vernon.... | 24 | 90 | 16 | 24 | 52.5 | ..... | 3 | 87 | 12 | 44 | 65.6 | ..... |
| Iowa City | 23 | 90 | 16 | 24 | 53.5 | 0.25 | 21 | 89 | 10 | 44 | 65.5 | 3.00 |
| Independence | 23, 24 | 87 | 15, 16 | 25 | 52.2 | 0.15 | 17 | 91 | 9 | 47 | 67.0 | 2.20 |
| Near Independ'ce | 24 | 88 | 15, 16 | 25 | 54.2 | 0.40 | 4, 17 | 86 | 11 | 47 | 66.6 | 3.10 |
| Waterloo | 24 | 88 | 16 | 20 | 50.2 | ..... | 4, 15, 17 | 87 | 8 | 40 | 65.6 | 2.30 |
| Rockford | 24 | 83 | 16 | 27 | 53.2 | ..... | 15, 16, 17 | 85 | 10 | 45 | 66.8 | ..... |
| Iowa Falls | 23 | 84 | 15, 16, 17 | 26 | 52.9 | 0.81 | 14, 16 | 88 | 12 | 44 | 69.8 | 4.43 |
| Algona | 23 | 80 | 15 | 19 | 47.3 | ..... | 16, 17 | 83 | 7 | 43 | 62.6 | ..... |
| West Bend | 23 | 82 | 15 | 17 | 47.8 | ..... |  |  |  |  |  |  |
| Webster City | | | | | | | 4, 30 | 85 | 9 | 44 | 64.5 | 2.03 |
| Boonesboro | 23 | 84 | 15 | 18 | 49.9 | 1.35 | 3, 15 | 85 | 9, 10 | 44 | 65.3 | 3.48 |
| Fontanelle | 24 | 87 | 15 | 20 | 53.2 | 1.10 | 15, 17, 21 | 87 | 9, 10 | 45 | 65.7 | 3.25 |
| Grant City | 13, 22 | 84 | 15 | 18 | 50.2 | ..... | 15 | 92 | 9 | 45 | 67.3 | 5.20 |
| Sac City | 13, 23 | 82 | 15 | 18 | 39.7 | ..... | 15 | 85 | 8, 9, 10 | 46 | 63.8 | ..... |
| Logan | { 12, 13, 21, 24 } | 82 | 17 | 16 | 50.1 | 0.40 | 4 | 85 | 12 | 39 | 64.2 | 2.00 |
| Woodbine | 13, 23 | 82 | 16 | 20 | 50.2 | 0.14 | 17, 30 | 87 | 9, 24 | 42 | 64.9 | 4.06 |
| West Union | 23 | 84 | 16 | 22 | 54.1 | 0.44 | { 17, 18, 19, 30 } | 86 | 9, 10 | 46 | 66.2 | 2.42 |
| Averages | | | | | 51.1 | 0.67 | | | | | 65.7 | 3.18 |
| MISSOURI. | | | | | | | | | | | | |
| St. Louis Univ... | 24 | 84 | 16 | 23 | 56.4 | 2.39 | 21, 22 | 89 | { 6, 7, 10, 11 } | 50 | 67.9 | 2.05 |
| Allenton | 23 | 93 | 16 | 28 | 56.0 | 2.60 | 21 | 96 | 10 | 44 | 67.0 | 2.57 |
| Hematite | 23 | 91 | 16, 17 | 30 | 57.3 | 2.55 | 22 | 95 | 11 | 48 | 69.7 | 1.25 |
| Hannibal | 14 | 85 | 17 | 30 | 54.8 | 1.48 | 21, 22 | 88 | 10 | 48 | 67.7 | 1.30 |
| Rolla | 23 | 89 | 17, 18 | 26 | 53.4 | 2.64 | 21 | 91 | 10 | 43 | 69.2 | 0.68 |
| Jefferson City... | 25, 26 | 83 | 17 | 27 | 52.7 | ..... | 21 | 91 | 7 | 46 | 67.0 | ..... |
| Kansas City | 21 | 88 | 16 | 25 | 57.1 | 0.25 | 21 | 89 | 12 | 44 | 67.1 | 4.25 |
| Harrisonville | 21, 22 | 88 | 15, 16, 17 | 30 | 57.8 | 0.63 | 21 | 90 | 6, 7 | 48 | 68.1 | 1.18 |
| St. Joseph | 21, 22 | 85 | 15, 16 | 31 | 59.6 | 2.20 | 21 | 89 | 6, 7 | 49 | 69.1 | 3.80 |
| Oregon | 21, 22 | 88 | 16 | 20 | 56.0 | 1.99 | 21 | 89 | 6, 9 | 44 | 67.7 | 2.70 |
| Corning | 23 | 86 | 16 | 22 | 54.8 | 2.10 |  |  |  |  |  | ..... |
| Averages | | | | | 56.0 | 1.88 | | | | | 63.1 | 2.20 |
| KANSAS. | | | | | | | | | | | | |
| Atchison | 21 | 90 | 16 | 24 | 56.1 | 1.75 | 21 | 90 | 6 | 43 | 70.7 | 3.30 |
| Leavenworth | | | | | | | 18 | 90 | 6 | 45 | 67.3 | 6.16 |
| Olathe | 22 | 89 | 16 | 22 | 55.0 | 1.20 | 21 | 92 | 7 | 45 | 67.5 | 7.15 |
| Paola | 13, 22 | 88 | 16 | 24 | 57.0 | 0.68 | 21 | 90 | 12 | 45 | 67.8 | 2.00 |
| Baxter Springs... | 12 | 86 | 16, 17 | 32 | 59.4 | 2.80 | 21 | 94 | 10, 11 | 50 | 71.7 | 2.80 |

Table showing the range of the thermometer, &c., for April and May—Continued.

| States and stations. | APRIL, 1870. | | | | | | MAY, 1870. | | | | | |
|--------------------------|--------------|------------|------------|------------|------------|-----------------------|------------|------------|--------|------------|------------|-----------------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain and melt'd snow. |
| KANSAS—Cont'd. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Lawrence | 21 | 89 | 16 | 23 | 56.8 | 1.08 | 18, 21 | 89 | 6 | 45 | 68.0 | 2.46 |
| Holton | 21 | 91 | 16 | 22 | 57.4 | ..... | 2, 21 | 91 | 6 | 46 | 69.0 | 3.44 |
| Neosho Falls | 22 | 87 | 16 | 24 | 53.4 | 2.00 | ..... | ..... | ..... | ..... | ..... | ..... |
| Le Roy | 21 | 86 | 16 | 23 | 55.8 | 2.39 | ..... | ..... | ..... | ..... | ..... | ..... |
| State Ag'l College | 21 | 85 | 16 | 19 | 53.5 | 0.50 | 21 | 93 | 8 | 49 | 68.8 | 0.91 |
| Council Grove | 21, 22 | 89 | 16 | 24 | 57.3 | 1.65 | 18, 21, 28 | 90 | 8 | 46 | 69.1 | 2.30 |
| Averages ..... | ..... | ..... | ..... | ..... | 56.2 | 1.56 | ..... | ..... | ..... | ..... | 68.9 | 3.39 |
| NEBRASKA. | | | | | | | | | | | | |
| Omaha Mission .. | 23 | 84 | 16 | 18 | 51.8 | 1.00 | 14, 15 | 88 | 6 | 43 | 65.7 | 7.68 |
| De Soto | 12, 13, 21 | 83 | 16 | 18 | 52.9 | 0.62 | 2 | 86 | 10 | 43 | 65.0 | 4.95 |
| Bellevue | 21 | 88 | 16 | 23 | 54.4 | 2.70 | 4, 17, 21 | 85 | 6 | 48 | 67.5 | 5.80 |
| Nebraska City .. | 21 | 89 | 16 | 22 | 55.7 | 2.00 | 21, 28 | 89 | 6 | 48 | 67.8 | 2.80 |
| Lincoln | 12 | 84 | 16 | 23 | 51.7 | 2.40 | ..... | ..... | ..... | ..... | ..... | ..... |
| New Castle ..... | ..... | ..... | ..... | ..... | ..... | ..... | 18 | 94 | 12, 26 | 43 | 65.6 | ..... |
| Averages ..... | ..... | ..... | ..... | ..... | 53.3 | 1.74 | ..... | ..... | ..... | ..... | 66.3 | 5.31 |
| UTAH TERRITORY. | | | | | | | | | | | | |
| G't Salt Lake City | 21 | 78 | 15, 30 | 30 | 51.4 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| CALIFORNIA. | | | | | | | | | | | | |
| Monterey | 26 | 76 | 5, 14 | 37 | 54.2 | 1.44 | ..... | ..... | ..... | ..... | ..... | ..... |
| Chico | 18, 24, 26 | 87 | 13 | 38 | 60.7 | 0.85 | 7, 8, 9 | 98 | 17 | 40 | 68.2 | 0.75 |
| Watsonville | 16, 25 | 80 | 5 | 32 | 56.0 | 1.21 | ..... | ..... | ..... | ..... | ..... | ..... |
| Vacaville | 18, 24, 26 | 80 | 4, 5 | 42 | 57.3 | 0.84 | ..... | ..... | ..... | ..... | ..... | ..... |
| Cahto | 18, 26 | 80 | 4 | 35 | 53.8 | 6.00 | 7 | 95 | 2, 13 | 41 | 60.3 | 2.25 |
| Visalia | 19, 26 | 87 | 5 | 38 | 60.5 | 1.40 | 7 | 100 | 17 | 47 | 69.1 | 0.30 |
| Clayton | 18 | 86 | 13 | 42 | 59.2 | 1.36 | ..... | ..... | ..... | ..... | ..... | ..... |
| Averages ..... | ..... | ..... | ..... | ..... | 57.4 | 1.87 | ..... | ..... | ..... | ..... | 65.9 | 1.10 |
| MONTANA TERR'Y. | | | | | | | | | | | | |
| Deer Lodge City .. | 25 | 76 | 14 | 16 | 45.6 | 1.47 | 10, 11, 12 | 85 | 30, 31 | 32 | 51.8 | 3.55 |
| COLORADO TERR'Y. | | | | | | | | | | | | |
| Denver | 12 | 80 | 15 | 16 | 48.1 | 2.80 | 14, 29 | 86 | 1, 5 | 40 | 56.1 | 0.35 |
| WASHINGTON TER. | | | | | | | | | | | | |
| Port Angeles | 28 | 58 | 12 | 42 | 47.7 | 3.25 | ..... | ..... | ..... | ..... | ..... | ..... |
| Seattle | 25, 29 | 82 | 10, 12 | 40 | 52.0 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Cathlamet | 24, 25 | 77 | 12, 15, 22 | 39 | 49.3 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Averages ..... | ..... | ..... | ..... | ..... | 49.7 | 3.25 | ..... | ..... | ..... | ..... | ..... | ..... |
| OREGON. | | | | | | | | | | | | |
| Portland | 25, 27 | 80 | 23 | 41 | 53.6 | 4.30 | 9 | 87 | 29 | 44 | 59.2 | 1.95 |
| Eola | 25 | 72 | 23 | 33 | 47.0 | 5.52 | 8, 9 | 76 | 16 | 38 | 52.3 | 2.46 |
| Averages ..... | ..... | ..... | ..... | ..... | 50.3 | 4.91 | ..... | ..... | ..... | ..... | 55.8 | 2.21 |

STATE AVERAGES FOR APRIL AND MAY, 1870.

Table of the highest and lowest temperatures (with dates prefixed) in the several States, &c., named, with the average mean temperature and 'rain-fall (including melted snow) in each, for the months of April and May, 1870.

| States. | APRIL, 1870. | | | | | | MAY, 1870. | | | | | |
|---------------------|------------------|----------------------|--------------|---------------------|---------------------------|-------------------|------------|----------------------|---------------|---------------------|---------------------------|-------------------|
| | Date. | Highest temperature. | Date. | Lowest temperature. | Average mean temperature. | Average moisture. | Date. | Highest temperature. | Date. | Lowest temperature. | Average mean temperature. | Average moisture. |
| | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Maine | 28 | 80 | 1 | 20 | 44.1 | 4.58 | 30 | 96 | 4 | 32 | 54.0 | 1.80 |
| New Hampshire... | 28 | 87 | 1 | 20 | 45.5 | 3.78 | 16 | 87 | 7 | 31 | 55.6 | 2.03 |
| Vermont..... | 28 | 77 | 1 | 23 | 45.2 | 2.69 | 30 | 88 | 13 | 34 | 56.4 | 1.48 |
| Massachusetts..... | 28 | 86 | 4 | 23 | 46.4 | 5.71 | 19 | 90 | 11 | 38 | 57.2 | 2.33 |
| Connecticut..... | 28 | 81 | 3, 4 | 31 | 48.3 | 4.63 | 16 | 92 | 2, 11 | 40 | 59.4 | 2.08 |
| New York..... | 28 | 86 | 4 | 23 | 48.0 | 3.03 | 15 | 93 | 30 | 30 | 61.7 | 2.05 |
| New Jersey..... | 15 | 86 | 5 | 31 | 51.4 | 5.58 | 16, 25 | 88 | 1 | 43 | 62.5 | 5.10 |
| Pennsylvania..... | 15 | 98 | 4, 8 | 26 | 50.8 | 4.61 | 18, 19 | 89 | 2 | 34 | 62.5 | 4.31 |
| Maryland..... | 15 | 87 | 4 | 31 | 53.4 | 5.58 | 16 | 88 | 11 | 47 | 64.8 | 4.96 |
| Virginia..... | 30 | 91 | 8 | 29 | 54.4 | 4.68 | 24 | 94 | 12 | 35 | 65.5 | 5.02 |
| North Carolina..... | 23, 25 | 91 | 6 | 30 | 57.0 | 3.04 | 22 | 97 | 12 | 36 | 66.1 | 6.14 |
| South Carolina..... | 24 | 93 | 18 | 34 | 63.7 | 2.74 | 17 | 92 | 12 | 52 | 72.3 | 2.70 |
| Georgia..... | 25 | 90 | 17, 18 | 32 | 60.3 | 1.75 | 22 | 93 { | 10, 11, 12 | 50 | 70.3 | 1.09 |
| Alabama..... | 24 | 87 | 18 | 33 | 61.5 | 2.38 | 21, 22 | 97 | 12 | 51 | 73.4 | 1.04 |
| Florida..... | 24, 25 | 94 | 18 | 38 | 66.7 | 2.15 | 19 | 99 | 7 | 47 | 76.9 | 1.40 |
| Texas..... | 8 | 92 { | 1, 15, 16 | 40 | 67.7 | 4.85 | 26 | 95 | 12 | 57 | 75.2 | 3.33 |
| Louisiana..... | 12 | 86 | 16 | 32 | 64.9 | 3.75 | 20, 21, 22 | 92 | 12, 15 | 56 | 75.5 | 1.90 |
| Mississippi..... | 25 | 91 | 16, 18 | 36 | 61.1 | 4.15 | 23 | 97 | 12 | 48 | 71.8 | 2.44 |
| Tennessee..... | 26, 27 | 88 | 5, 17 | 30 | 56.4 | 3.39 | 21 | 96 | 14 | 42 | 67.8 | 3.92 |
| Kentucky..... | 24 | 90 | 4, 5 | 32 | 55.2 | 3.46 | 23 | 95 | 11 | 43 | 67.6 | 3.98 |
| Ohio..... | 24 | 86 | 2, 4 | 27 | 51.7 | 2.24 | 18, 23 | 94 | 13 | 40 | 67.1 | 1.77 |
| Michigan..... | { 13, 14, 22, 26 | { 85 | 5, 7, 16, 17 | 26 | 48.7 | 2.50 | 15 | 98 | 16 | 36 | 61.2 | 2.13 |
| Indiana..... | 24 | 88 | 17 | 24 | 54.0 | 2.21 | 17, 22 | 94 { | 10, 11, 29 | 40 | 66.2 | 1.61 |
| Illinois..... | 23, 24 | 92 | 17 | 24 | 53.2 | 1.48 | 17, 22 | 97 { | 7, 8, 10, 12 | 40 | 65.8 | 1.60 |
| Wisconsin..... | 23 | 89 | 16 | 20 | 48.8 | 0.79 | 30 | 96 | 8 | 32 | 62.4 | 3.45 |
| Minnesota..... | 23 | 87 | 15 | 18 | 50.0 | 0.85 | 3 | 91. | 24 | 40 | 65.1 | 4.24 |
| Iowa..... | 23, 24 | 90 | 17 | 16 | 51.1 | 0.63 | 15 | 92 | 12 | 39 | 65.7 | 3.18 |
| Missouri..... | 23 | 93 | 16 | 20 | 56.0 | 1.88 | 21 | 96 | 10 | 43 | 68.1 | 2.20 |
| Kansas..... | 21 | 91 | 16 | 19 | 56.2 | 1.56 | 21 | 94 | 6 | 43 | 68.9 | 3.39 |
| Nebraska..... | 21 | 89 | 16 | 18 | 53.3 | 1.74 | 18 | 94 | 6, 10 | 43 | 66.3 | 5.31 |
| California..... | { 18, 19, 24, 26 | { 87 | 5 | 32 | 57.4 | 1.87 | 7 | 100 | 17 | 40 | 65.9 | 1.10 |
| Dist. of Columbia.. | 15 | 80 | 5 | 35 | 53.8 | 3.70 | 4, 16 | 81 { | 3, 11, 12, 23 | 54 | 64.5 | 4.70 |

NOTES OF THE WEATHER.—APRIL, 1870.

Houlton, Me.—Ice gone 14th; auroras 18th, 24th, 27th; frogs 28th.
Steuben, Me.—Robins, frogs 9th; freshet 21st; brilliant aurora 25th.
Orono, Me.—Ice out of Penobscot 8th; arbutus 15th; aurora 25th; month 4° warmer than last April; season a fortnight earlier.

Williamsburg, Me.—Robins 13th; frogs 26th; thunder 30th.

West Waterville, Me.—Robins 1st; frogs 15th; sparrows 19th; swallows 22d; thunder-shower 28th. Month 4°·08 above April average of six years.

Gardiner, Me.—Auroras 1st, 2d, 6th, 7th, 8th, 15th, 22d, 23d, 25th; stormy 3d to 7th. Warm, moist month, 3°·18 above April average of thirty-four years, (41°·59.) Season about two weeks earlier than last year.

Lisbon, Me.—Robins, aurora 7th; frogs 14th; lightning and rain 15th.

Norway, Me.—Auroras 2d, 7th; snow, then rain, 3d, 4th; robins 8th; bluebirds 9th; frogs 18th; thunder-shower 28th; grain sowed 29th. April mean temperature, 1868, 37°·85; 1869, 40°·90; 1870, 44°·62.

Cornish, Me.—Auroras 2d, 25th; robins 2d; bluebirds 6th; sparrows 8th; snow, rain 20th, 21st; red-maple blossoms 23d; swallows 26th.

Cornishville, Me.—Average April temperature for forty years 39°·75; this 45°·31. Moisture since October 1, 1869, 46·35 inches.

Antrim, N. H.—First thunder-storm 28th; snow on six, rain on thirteen days.

Stratford, N. H.—Robins 9th; adders' tongue 27th. Last of month dry and pleasant; but little sugar made in April.

Whitefield, N. H.—Auroras 1st, 21st, 25th; buttercups, violets 28th.

Tamworth, N. H.—Aurora 1st; robins 2d; twenty inches snow on ground 10th; sleighing gone 13th; frogs 21st; end of one hundred and two hours' rain 22d.

North Craftsbury, Vt.—Warm, dry month; drought growing severe.

Newport, Vt.—Auroras 1st, 2d, 5th, 25th, 26th, 28th; robins 6th; frogs 14th.

Woodstock, Vt.—Bright auroras 2d, 8th; eight inches snow on hills 21st.

West Charlotte, Vt.—Splendid aurora 3d; lake opened 12th; snow gone 17th; first dew 18th; kingfisher 24th; spring wheat up 28th.

Panton, Vt.—Phebe birds (*Sayornis fuscus*, *Baird*,) sparrows 9th; frogs 13th; aurora 29th.

Castleton, Vt.—Planted potatoes 9th; auroras 25th, 28th.

Kingston, Mass.—Frogs 5th; lightning and thunder 28th; peach blossoms 29th. Of nineteen Mondays past fifteen have been rainy.

Topsfield, Mass.—Snow, rain, gale, hail 4th; aurora 23d; frost 29th.

North Billerica, Mass.—Robins, sparrows 2d; rain and snow 4th; frogs 5th; swallows 15th; frosts 26th, 30th; thunder and lightning 28th.

New Bedford, Mass.—Wild geese 7th; dandelions 22d; peach blossoms 30th.

Worcester, Mass.—Snow and rain 3d, 4th, 6th; dandelions 14th; thunder and lightning 25th; arbutus, liverwort 26th; thunder-shower 28th.

Mendon, Mass.—Aurora 25th; thunder-shower 28th. Potatoes planted.

Lunenburg, Mass.—Thunder-storm 28th; ground dry 30th. April average for thirty years, 44°·73; in 1869, 45°·51; in 1870, 47°·07.

Williamstown, Mass.—Liverwort 14th; arbutus, dandelion 15th; damaging flood 19th; slight aurora 25th.

Newport, R. I.—Rain 2d; snow 3d; rain 4th; white frost 30th.

Middletown, Conn.—Brilliant aurora 15th; thunder-shower 28th.

Southington, Conn.—Gardening and plowing 8th; snow drifts gone 14th; aurora 24th; thunder-showers 28th.

Colebrook, Conn.—Snows, slight, 3d and 4th; three inches 6th; heavy rain 18th.

Moriches, N. Y.—Rain 2d, 3d, mixed with snow 4th, 5th, 6th; aurora 25th; vivid lightning, thunder with some rain 28th.

Poughkeepsie, N. Y.—Auroras 1st, 25th, 29th; thunder-storm 28th.

Garrisons, N. Y.—Storm 3d to 6th; frost 30th.

New York City.—Snow, rain, sleet, snow 4th, 5th, 6th; aurora 25th; gale, then hail and thunder-shower, 28th.

Newburg, N. Y.—No "April showers;" only one thunder-shower.

Bannerville, N. Y.—Auroras 1st, 26th, 29th; freshets 16th to 25th.

Gouverneur, N. Y.—Blackbirds 1st; ice out of Oswegatchie 8th.

North Hammond, N. Y.—Robins 1st; St. Lawrence open 11th; frogs 12th; snow 21st; swallows 26th. Season dry, backward; little grain sowed.

Houseville, N. Y.—Auroras 2d, 7th, 28th; snow nearly gone 9th.

Leyden, N. Y.—Magnificent red aurora, equal to that in 1839, but less extent and duration, 7th; pewees 9th; liverwort, frogs 17th; thrush 23d. Warm and pleasant April; snow gone by 15th without freshets.

Utica, N. Y.—Auroras 1st, 2d, 7th, 21st, 27th, 28th, magnificent 25th; ice 8th, 9th, 26th; swallows 16th. Little rain, no thunder, no lightning; solar spots visible every clear day; vegetation forward.

South Trenton, N. Y.—No rain till 27th, then showers till 22d. No thunder yet this year.

Cazenovia, N. Y.—Frosts 26th, 29th, 30th; auroras 25th, 28th.

Depauville, N. Y.—Auroras 1st, 2d, 3d, 7th, 12th, 21st, 22d, 23d, 25th, 28th; robins 1st; pewees 4th; sleighing gone 6th; frogs 14th; black-birds 21st.

Palermo, N. Y.—Last sleighing 1st; pewees 9th; wrens 22d; daffodils 25th; barn swallows 26th. Warmest April in seventeen years.

Nichols, N. Y.—Snow gone 6th, drifts 20th; freeze 29th, 30th. Month ended cold and dry. From October to May snow-fall was 99.5 inches.

Himrods, N. Y.—Rains 17th to 20th, raised Crooked Lake ten inches; auroras 16th, 21st, 25th.

Little Genesee, N. Y.—Frogs 13th; snow gone 17th; thunder-shower 24th.

Buffalo, N. Y.—Lake Erie open 16th; thunder 24th. Month 4° warmer than average of twelve years; vegetation a fortnight earlier than last year.

Newark, N. J.—Cloudy till 7th; bright aurora 25th; thunder-gust 28th. Month nearly 2° 5' warmer than average of twenty-six Aprils—warmest, 1844, 54° 31'; coldest, 1857, 43° 40'. Average rain in twenty-six Aprils, 3.609 inches.

Rio Grande, N. J.—Bright red and white aurora 23d; thunder-shower 28th.

Moorestown, N. J.—On 15th mercury at 82°, at 2 p. m.; an east wind reduced it 20° in thirty minutes, and 38° in a few hours; thunder, rain, hail 28th.

New Germantown, N. J.—Thunder-shower 18th, with hail 29th; auroras 24th, 25th; plowing for corn 30th.

Newfield, N. J.—Five days' storm ended in two inches snow on 5th; birds and frogs gleeful 9th; red-maple blossoms 14th, peach 20th; auroras 24th, 25th.

Greenwich, N. J.—Rain, hail, snow 30th ultimo to 5th; peach blossoms

13th, pears 21st; fire-flies 23d; thunder and lightning 28th; corn-planting 29th.

Vineland, N. J.—Snow 4th; peach blossoms 6th; bluebirds 7th; thunder and lightning 17th, heavy rain 18th.

Nyces, Pa.—Swallows (ten inches snow yet) 8th; thunder-storm 28th.

Dyberry, Pa.—Ice eighteen inches under six inches snow on a pond 7th; liverwort 10th; frogs 11th; thunder-shower 28th; winter and spring snow-fall, ninety inches.

Fallsington, Pa.—Gale, rain 1st to 3d, snow 4th, rain 5th; aurora 24th; thunder, hail, rain 28th, 29th.

Philadelphia, Pa.—Rain 1st to 3d; snow 4th; lightning 17th; thunder 28th.

Horsham, Pa.—Aurora 25th; heavy thunder-storm, first of season, 28th.

Plymouth Meeting, Pa.—Hail, snow-squalls 4th; heavy rain 18th; frosts 26th, 30th, ice 20th; peach blossoms 22d, plum 27th, pear 28th.

White Hall, Pa.—Six inches snow 5th; maple full bloom 13th; peach, cherry 29th; frosts 26th, 30th; swallows 27th; hail 28th.

Factoryville, Pa.—Snow, rain, then fourteen inches snow, 4th, 5th; aurora 8th; lightning 17th; frosts 26th, 27th. A pleasant month for farmers.

Reading, Pa.—Snow, rain 1st to 5th; thunder-storms 17th, 18th, 28th.

West Chester, Pa.—Bloodroot 12th; heavy thunder-showers 17th; ice 20th.

Parkersville, Pa.—Snow, rain 4th, 5th; smoky 5th to 17th and 22d to 29th.

Ephrata, Pa.—Snow 4th, 5th; aurora 5th; thunder-showers 17th, 28th.

Ashland, Pa.—Six inches snow 4th; thunder-storm 28th; frost, ground frozen, flowers killed 29th.

Harrisburg, Pa.—High waters 3d, 19th; mercury fell 40° in twenty-four hours 15th, 16th.

Carlisle, Pa.—Oats sowed 9th; thunder-shower 28th; corn-planting 30th.

Tioga, Pa.—Sowed oats 14th; highest water ever known here 18th.

Grampian Hills, Pa.—Plowing 9th; snow in woods gone 17th. A dry April.

Franklin, Pa.—Very dry, vegetation forward, no thunder yet.

Pittsburg, Pa.—Month cloudy, short rains, no hard freeze.

Brownsville, Pa.—Gardening 12th; birds singing 25th. Wheat beautiful.

New Castle, Pa.—Slight snow 8th. Pleasant month; good fruit prospect.

Beaver, Pa.—Vegetation a fortnight earlier than last year.

Canonsburg, Pa.—Snow 4th to 6th; peach blossoms 16th, dandelion 20th, dogwood 25th, pear 26th, quince 29th.

Milford, Del.—Rainy to 3d; to 6th snow, hail, freeze; thunder-showers 17th, 28th; apple blossoms 28th, strawberry 30th.

Woodlawn, Md.—Aurora 5th; peach blossoms 16th, cherry 23d, pear 27th, apple 28th; frosts 30th, with ice 20th; whippoorwill 29th.

Emmitsburg, Md.—Snowy all day 4th; thunder-storm 28th; rain 29th.

Johnsontown, Va.—Showers 1st to 5th; frost 6th, 26th; plum blossoms 1st, cherry 11 h, pear 15th; thunder 25th, lightning 28th, thunder-shower 29th.

Hampton, Va.—Wet month; eighteen cloudy and eleven rainy days last frost, 30th ultimo.

Zuni Station, Va.—Aurora 25th. Fruit, except peaches, promising.

Bacon's Castle, Va.—Rain, hail, snow to 6th; martins 7th; apple blossoms 9th, pear 13th; corn planted 15th, up 27th. April mild and wet.

Comorn, Va.—Frosts heavy 6th, light 26th; corn-planting 13th.

Vienna, Va.—Two inches snow 4th; maple blossoms 11th, peach 15th; whippoorwill 30th. Season ten days forward.

Piedmont, Va.—Five inches snow 4th, ice 6th, frost 8th, 26th, hail 18th; peach full bloom 20th, apple 30th; aurora 25th; thunder-gust 28th.

Snowville, Va.—Much melting snow 18th; thunder 28th, 29th.

Wytheville, Va.—Five rainy days, ended in snow on 4th; ground frozen 5th; severe snow storms 17th, 18th; peach blossoms 23d; cherry 25th; apple 27th.

Oxford, N. C.—Slight snow, melted as it fell, 4th.

Chapel Hill, N. C.—Hail, then snow, then rain, 18th; unusual cold and wet.

Albemarle, N. C.—Apple blossoms 15th; thunder 17th, 27th, with rain 28th; snow sprinkle 18th; a dry month.

Statesville, N. C.—Snow whitens ground 17th; light frosts 18th to 20th.

Aiken, S. C.—Hail, thunder 3d; white frost 4th; hail 17th.

Holland's Store, S. C.—Whippoorwill 2d; slight hail 3d; martins 11th; snow, sleet, hail, rain 17th; ice 18th.

Gowdeysville, S. C.—Light frost 4th; thunder and rain 9th, 10th, 27th to 29th; rain, hail, sleet (and snow in places) 17th.

Bluffton, S. C.—Month dry, smoky; cold about 18th; ice some places.

Berne, Ga.—Frost bit early corn, cotton, &c., 6th; thunder shower 29th.

Penfield, Ga.—Frost 5th; snow 17th, just like one in April, 1849.

Columbus, Ga.—Dogwood 1st; light frosts 5th to 7th; heavy thunder and lightning 8th; cicada (locust) heard 11th; fire-fly 28th; tree tulips and roses 30th.

Rockville, Ala.—Fire-fly 10th; whippoorwill 12th; snow flurry 17th; humming birds frozen, fruit killed 18th; frost, ice 19th; wheat heading 26th.

Carlowville, Ala.—Ice 18th, kills early fruits and vegetables; cotton up 30th.

Coatopa, Ala.—Heavy frost 18th; thunder showers 28th, 29th.

Greene Springs, Ala.—Light snow 17th; cold to 19th; killed all the peaches.

Jacksonville, Fla.—April comparatively cold and dry; delayed growth.

Pilatka, Fla.—Month cold and dry; breeze on 18th prevented frost.

Ocala, Fla.—Ground dried eight inches deep, till copious rain saved crops 30th.

Gilmer, Texas.—Month cool, six frosts, seven thunder showers.

Houston, Texas.—Frost 15th; thunder, lightning 14th, 24th, 25th, 26th.

Oakland, Texas.—Wild geese 2d; whippoorwill 11th; thunder storm, hail 15th; frost 16th; heavy thunder, with showers, 23d, 26th.

Clinton, Texas.—Frost 16th; thunder storms 25th, with hail 27th, (some as large as hens' eggs,) ten miles west of this place, destroying crops, fowls, &c.

New Orleans, La.—Martins 1st; fire-flies 6th; thunder storm, with gale, hail, deluge 8th; fires comfortable 16th.

Natchez, Miss.—Frosts, light 1st, 17th, 18th, heavy 16th; tremendous thunder-storm, with hail and gale 9th.

Brookhaven, Miss.—Frosts 1st, 2d, 16th to 18th; whippoorwill 1st; thunder showers 8th, 9th; fire-flies 17th; ripe strawberries 21st; peas 27th.

Enterprise, Miss.—Planting corn 3d, cotton 30th; chuck-wills-widow 9th; frost and ice 17th, (same, exactly twenty years ago;) fire-fly 29th.

Elizabethton, Tenn.—Frost 18th; dog-wood 28th. Season backward.
Austin, Tenn.—Rain, an inch snow 16th; sleet, icicles 17th; frosts 18th, 19th.

Clarksville, Tenn.—Light frosts 5th to 7th; skim ice, misty snow 17th.
Trenton, Tenn.—Snow 15th, 16th; heavy frosts, ice 17th, 18th, all peaches, many apples destroyed. Except 15th to 20th, fine month for planting.

Pine Grove, Ky.—Rain to 3d; wet snow all day 17th.

Shelby City, Ky.—Martins 2d; plowing 10th; showers, snow 16th.

Salem, O.—Snow 5th; aurora 24th; plum blossoms 25th.

Steubenville, O.—Aurora 24th; peach blossoms 24th, cherry 25th, plum 27th, apple 28th; frosts 8th, 13th, 23d, 26th, 30th.

Cleveland, O.—Lake open 11th; maple blossoms 23d, cherries 25th; heavy frost 26th.

Sandusky, O.—Pewees 8th; bluebirds 22d; apricots blossom 24th.

North Fairfield, O.—Snow 17th, with rain 18th, rain 19th; aurora 25th; ice 26th; peach blossoms 27th. Season two weeks early.

North Bass Island, O.—Heavy dew 11th; thunder 15th; last frosts 4th, 5th.

Hillsboro, O.—Snow, rain 17th; peach and early cherry blossoms 22d, apple 29th, (last year May 5th;) some frost 26th.

Toledo, O.—Rain, snow 15th, 16th; cherry blossoms 26th, peach 28th.

Bowling Green, O.—White aurora 25th; frost 30th. Spring favorable.

Urbana, O.—Aurora 30th. Month 4° above average, 5° above last year.

Springfield, O.—Snow 16th, 17th. At 5 p. m., 26th, air calm, sky clear, a sudden, sharp, musical sound in southwest, swelled till like rumbling thunder, (as if a ponderous mass was whizzing past with terrific speed,) and then died away far in the northeast. The sound lasted about one minute.

Bethel, O.—Light thunder-shower 11th; rain, snow, very cold 16th; peach blossoms showing 17th; light frosts 26th, 30th.

Jacksonburg, O.—Ice 7th; martins 13th; snow-storm 16th; peach, cherry, plum full bloom 24th, apple 28th; swallows 25th, 29th; aurora 25th.

College Hill, O.—Brilliant meteor 29th, sparks in its trail as large as a fist.

Detroit, Mich.—Auroras 3d, 25th; thunder-showers 13th, 24th; ground frozen, heavy white frost 26th, frosts 27th to 30th.

Adrian, Mich.—Beautiful bright aurora, portions rose color 25th.

Alpena, Mich.—Auroras 1st, 2d, 5th, 21st, 25th, 28th; blue birds 8th thunder and lightning 13th.

Litchfield, Mich.—Aurora 5th; cherry blossoms 30th.

Grand Rapids, Mich.—Aurora 5th; thunder-shower 24th.

Northport, Mich.—Auroras 2d, 25th; frogs 9th; thunder and lightning 13th; freezes 28th, 29th. Some apple trees killed, probably last fall.

Ontonagon, Mich.—River open 9th; frost 24th, lake open 30th.

Benzonla, Mich.—Lakes open 13th; snow 15th; bright aurora 25th.

Vevay, Ind.—Plum blossoms 14th, peaches 13th, pears 20th, apples 22d; snow 16th, 17th.

Mt. Carmel, Ind.—Rain, snow 16th; aurora, corn planting 25th.

Spiceland, Ind.—Rain, sleet, two inches snow 16th; lightning 27th. Numerous solar spots visible nearly all the month with one hundred power telescope.

Columbia City, Ind.—Bright auroras 5th, 6th; thunder 14th; rain,

sleet, snow 16th, ice 17th, much fruit destroyed; thunder-storm, high wind 27th.

Knightstown, Ind.—Cherry full bloom 27th.

La Porte, Ind.—Aurora, lakes open 5th; thunder 13th; storm, hurricane 27th.

Merom, Ind.—Swallows 6th; peach blossoms 10th, cherry 13th, apple 22d.

New Harmony, Ind.—Rain, six inches snow 15th, 16th.

Near Chicago, Ill.—Snowy 16th to 18th; month generally pleasant.

Evanston, Ill.—Aurora 2d; thunder and lightning 24th.

Marengo, Ill.—Auroras 2d, 5th, 25th; thunder-shower 24th.

Charleston, Ill.—Snow 15th; violent wind and thunder-storm 27th.

Mattoon, Ill.—Snow 16th. Half crop peaches. Earliest spring in years.

Aurora, Ill.—Oats, barley sowed 10th; frosts 26th, 29th. Season early.

Louisville, Ill.—Six inches snow 15th; peaches full bloom 26th; thunder-storm 27th. Early dry spring.

Belvidere, Ill.—Dry and warm to 23d, when mercury fell from 88° at 3 p. m. to 57° at 4 p. m., and to 48° at 4.40 p. m.

Ottawa, Ill.—Frost, ice, 5th, 29th; thunder-storms 13th, 27th; rain, hail, 15th, 16th. An unusually early spring.

Winnebago, Ill.—Auroras 2d, 5th, 27th; thrush, martin, 22d; thunder-showers 24th, 27th. Month 7° above average for 12 years.

Wyand, Ill.—Lightning 12th; thunder-showers 13th, 14th; ground frozen 16th, 17th; apples blossoming 30th.

Tiskilwa, Ill.—April dry and warm, little wind, season early.

Hennepin, Ill.—Month warm, two light showers and a few snow-flakes; rain needed. Orchard fruits hurt by last October freeze—(Shepherd.) Thunder-showers 14th, 28th; hail, snow, 15th; ice 17th—(Osborn.)

Dubuois, Ill.—Nearly 5 inches snow 15th, 16th, killed most of peaches.

Manchester, Ill.—Martins 2d; thunder-showers, violent wind, 12th, 27th.

Mt. Sterling, Ill.—Thunder-showers 12th, 13th, 27th; swallows 14th; ice 16th. Farm work a month ahead of last year. Fruit trees blooming full.

Andalusia, Ill.—Best spring for farmers in many years.

Sturgeon Bay, Wis.—Thunder-shower, hail, 13th; aurora 24th.

Manitowoc, Wis.—Auroras 2d, 24th, 25th; river open 3d; lake open all winter; thunder-storms 13th, 23d, 24th. Warmest April in 19 years.

Milwaukee, Wis.—Ice out of harbor 14th; aurora 18th; hard frost 29th.

Embarrass, Wis.—Auroras 1st, 2d, 5th, 24th, 25th, 27th; thunder-storm, large hail, 13th; thrush, 19th. A very early spring.

Mosinee, Wis.—Robins 1st; auroras 5th, 25th; frost and snow gone 14th.

Baraboo, Wis.—Driest and warmest April known here.

Bayfield, Wis.—Thunder-storm 13th; snow-storm 16th; aurora 25th.

Minneapolis, Minn.—Bluebirds 1st; robins 3d; sowing wheat 4th; thunder-shower 14th; plum blossoms 30th.

Koniska, Minn.—Heavy thunder-gust 23d; brilliant aurora 25th. Finest spring I ever saw; dry and pleasant.

Madelia, Minn.—Thunder-clap at 10 a. m. 30th, calm, not a cloud visible; thermometer at 76° .

Clinton, Iowa.—Martins 9th; lightning 12th; heavy frost 15th; river

20 feet 2 inches above low-water mark, (higher than in 1859,) 20th to 24th.

Waukon, Iowa.—Auroras 5th, 18th, 28th, red a. m. of 5th, brilliant 25th; wheat sowing 6th; toads 13th; high river 21st; frosts 25th to 28th.

Dubuque, Iowa.—Cherry and plum blossoms 20th; Mississippi high as ever known 22d; thunder-storm, gale, 24th; aurora 25th.

Monticello, Iowa.—Heavy thunder-storm 24th; brilliant red aurora 26th.

Fort Madison, Iowa.—Wheat sowing 13th, oats 18th; snow 16th; corn planting 29th.

Guttenberg, Iowa.—Thunder-showers 10th, 24th. Fine April for seed-ing.

Independence, Iowa.—Hard frosts 4th to 10th, 16th to 18th, 29th; thunder, sprinkle, 10th; snow-spits 15th; plum blossoms 30th—(Warne.) First rain since March 30th, 27th; pleasant, dry month; wheat and oats all sowed—(Wheaton.)

Rockford, Iowa.—Ice gone 3d; thunder 11th, 14th, with timely rain 24th.

Iowa Falls, Iowa.—April never more favorable for seeding.

Algona, Iowa.—Light snows 15th, 16th; thunder-shower 24th; grains sown, corn and potatoes planted. Finest April in many years.

West Bend, Iowa.—Blackbirds 3d; auroras 6th, 25th, 28th; frogs 7th.

Boonesboro, Iowa.—Robins 2d; snow-squalls 15th, 16th; frosts 28th, 29th. Month 6° above the annual mean of 14 years.

Fontanelle, Iowa.—Ground frozen 4th, 5th, 6th; ice 5th, 15th to 20th, 28th; thunder-showers 24th, with sleet 14th; violets in blossom 25th.

West Union, Iowa.—Auroras 2d, 3d, 25th. Month 8° 5 warmer than last year.

St. Louis, Mo.—Thunder, lightning, rain, 13th, with high winds 27th; rain, hail, snow, 15th; snow 16th.

Allenton, Mo.—Thunder 13th, 27th; snow-storm, killing peaches, 16th.

Hematite, Mo.—Rain 14th; sleet, snow, 15th; deepest snow of season 16th; peaches, cherries, small fruits generally, injured.

Rolla, Mo.—Rain, high wind, thunder, 13th; rain, hail, snow, 15th; snow 16th; ice 17th; thunder-storm 27th; peach blossomed 10th, apple 25th.

Jefferson City, Mo.—Thunder-storm 13th; severe frost 17th, damaged fruits.

Kansas City, Mo.—Frosts 15th to 17th, killed pears and nearly all peaches.

Harrisonville, Mo.—Thunder 14th, 15th, 26th; damaging frost 16th.

Oregon, Mo.—Auroras 15th, 21st; freeze 15th to 17th, killed much fruit.

Burlington, Kans.—Ice 16th, damaged fruits in blossom.

Paola, Kans.—Gale 13th, with thunder-shower 14th; ice 15th, 17th, with snow 16th, killing vegetation and probably all peaches.

Baxter Springs, Kans.—Ice 15th to 17th; white frosts 18th to 20th.

Lawrence, Kans.—Heavy frosts 15th to 17th, on 17th below freezing all day, killing nearly all pears, plums, early apples, and *budded* peaches; cherries, winter apples, and *seedling* peaches unhurt; cherries blossomed 19th.

Holton, Kans.—The hard freeze 15th to 17th spared some peaches, cherries, and late apples; spring wheat and oats brushed in, all spoiled; corn up.

Le Roy, Kans.—First April snow in 13 years 16th.

Council Grove, Kans.—Thunder-showers 8th, 24th, 26th, 27th; ground frozen 15th to 17th; peaches in full bloom killed.

Bellevue, Neb.—Froze in shade all day 15th. Month 4° warmer than last year.

Nebraska City, Neb.—Ice 16th; early fruits killed; wild plum blossoms 24th.

Harrisburg, Utah.—Two inches snow 5th; cold 15th, then pleasant to 30th.

Chico, Cal.—Heavy hail, 2 inches deep, slight damage to crops and fruit, 12th.

Watsonville, Cal.—Strawberries, peas, 23d. More frost than usual in April.

Cahto, Cal.—Earthquake shock 17th, north to south, spilled milk from pans.

Clayton, Cal.—Severe frost 1st; earthquake, west to east, 2d, no damage; rain, hail; 4th; frosts 5th, 7th, 13th.

Deer Lodge City, Mont. Ter.—First lightning and thunder 5th; tornadoes 8th, 12th—on 12th mercury fell 20° in 20 minutes; fire-flies 24th.

Port Angelos, Wash. Ter.—Snow-squalls 4th to 7th; aurora 25th. Only 5 clear days in April. Season wet, cold, and backward.

NOTES OF THE WEATHER FOR MAY, 1870.

Steuben, Me.—Terrific thunder-storm, with hail, 1st. Very heavy frosts 8th, 18th.

Orono, Me.—Aurora to zenith 27th; vegetation very forward.

Williamsburg, Me.—Auroras, bright 2d, pale 30th; frosts 5th, 7th.

West Waterville, Me.—Bobolink 16th; plum blossoms 17th, apple 20th. Month 1°·57 above May average of 6 years.

Gardiner, Me.—Beautiful May, dry, average heat; crops promising.

Lisbon, Me.—Bobolink 17th; heat lightning 19th; aurora, crimson folds or curtains, 27th. Month fine but dry.

Norway, Me.—Linnetts 15th; corn planting 20th; frost 23d; auroras 30th, splendid red 27th; apples in full bloom 28th.

Stratford, N. H.—Dandelions 15th; plum blossoms 18th, apple 27th, lilac 29th.

Whitefield, N. H.—Auroras 1st, 17th, 30th, 31st, bright red 27th; rain, 4 inches snow, 12th. Very dry spring.

Tamworth, N. H.—Whippoorwill 14th; dandelions 19th; apple blossoms 20th to 30th; ice 23d; bobolink 24th; aurora 30th. Drought severe.

Goffstown, N. H.—Aurora 27th. Last of May dry.

Lunenburg, Vt.—Snow, six inches, 12th; bright aurora, dark red 27th. No frost in May. Many vegetables four weeks earlier than last year.

North Craftsbury, Vt.—Auroras 19th, 22d, 26th, 28th, 30th, brilliant 1st, 27th and 31st; swallows 7th; bobolink 16th. Drought becoming severe.

Newport, Vt.—Auroras 1st, 27th, 28th, 30th; snow 12th; frosts 27th, 28th.

Woodstock, Vt.—Swallows, cliff 2d, barn 6th, bank 7th; bobolink 14th; hard frost 23d. Drought, low streams, vegetation suffering.

West Charlotte, Vt.—Auroras, crimson 1st, 2d, 6th, 13th, 14th, 15th 24th, and 27th, brilliant 28th, red 29th; bobolink 12th; pear full bloom 21st.

Middlebury, Vt.—Great drought, old pastures drying up.

Panton, Vt.—Auroras 1st, 18th, 28th, 29th, brilliant 31st.

Castleton, Vt.—Aurora 1st; dandelions 7th; thunder, lightning 19th.

Kingston, Mass.—Cherry blossoms 5th; thunder and lightning 10th.

Cambridge, Mass.—Aurora 27th; sun invisible 6th to 12th.

North Billerica, Mass.—Apple blossoms 17th; aurora 27th; northeast storm 28th; corn up 30th. Vegetation much advanced.

New Bedford, Mass.—Peach blossoms fall 10th; pear full bloom 11th, apple 25th.

Worcester, Mass.—Brilliant aurora 1st; cherry blossoms 1st, peach 12th, apple 16th; slight frost 18th.

Mendon, Mass.—Rye headed; season forward and promising.

Williamstown, Mass.—Peach blossoms 6th, apples full bloom 19th.

Columbia, Conn.—Dryest May in several years.

Moriches, N. Y.—Peaches full bloom 1st; whippoorwill 2d; thunder 3d, 7th, 10th, shower 20th. May has been a cloudy month.

South Hartford, N. Y.—Heavy thunder 19th. May cool and very dry.

Fort Edward, N. Y.—Hudson low, mills stopped, crops suffering by drought.

New York City.—Very heavy thunder showers 10th, 13th, 20th, 21st.

Glasco, N. Y.—Aurora 1st. May dry throughout.

Newburg, N. Y.—May very warm, 10° above average maximum.

Cooperstown, N. Y.—Apples full bloom 20th. Finest spring in many years; meadows need rain.

Utica, N. Y.—Auroras 1st, 22d, 27th, 31st; thunder-storms 19th, 23d.

South Trenton, N. Y.—Cherry blossoms 9th, apple 14th; first thunder 19th. A beautiful month, but too dry for grass crop.

Depauville, N. Y.—Auroras 1st, 7th, 22d, 24th, 27th, 31st; plums blossom 9th; apples 17th. May 4°.1 above mean of six years; severe drought.

Palermo, N. Y.—Linnets 8th; dandelions 11th; bobolinks 15th; lilacs 24th. Less rain this spring than in any spring in seventeen years.

North Volney, N. Y.—Auroras 1st, 27th. Last of month dry and warm.

Waterbury, N. Y.—Auroras 1st, 27th; thunder-shower 10th, 16th.

Nichols, N. Y.—Numerous light showers; vegetation two weeks forward.

Himrods, N. Y.—Cherry blossoms 1st, apple 15th; first thunder-showers 10th; aurora 27th. Grain and grass need rain.

Buffalo, N. Y.—Cherry and plum blossom 4th, apple 15th, lilac 17th. Month 9.75° warmer than the May average of twelve years.

Newark, N. J.—The greatest temperature of this May (82°) is below the past twenty-seven Mays except seven; its least (42°).5) is above the twenty-seven; and its mean (60°).41) is 2° above the mean of the twenty-seven (58°).47;) and despite easterly winds and cloudiness its rainfall is less than in Mays of many years.

New Germantown, N. J.—Very heavy thunder, forked lightning, rain and damaging wind 21st. Fine month for farmers.

Greenwich, N. J.—Apples full bloom 3d; showers eight days past, 11th; destructive hail at Salem 10th; strawberries ripe 24th; severe wind and rain storm 27th. No frost in May.

Dyberry, Pa.—Showers 6th to 12th; thunder-storms 19th, 21st; slight frost 23d. Season ten days early—promise of abundant fruits.

Fallsington, Pa.—Vegetation forward and strong growth.

Philadelphia, Pa.—Great hail-storm 8th—began and ended in rain—spheres from $\frac{1}{2}$ to $1\frac{1}{2}$ inches diameter, doing immense damage.

Plymouth Meeting, Pa.—Wet month, eighteen rainy days; warmest

May in six years. Apples blossomed on 12th, 1867—17th, 1868—7th, 69—6th, 1870.

Whitehall, Pa.—Full bloom of cherries 3d, pears 5th, apples 10th, dogwood 18th, quinces 19th; heavy thunder-storm 20th.

Factoryville, Pa.—Aurora 1st; frost 2d.

West Chester, Pa.—Apple blossoms 1st; hail 8th; rye in head 13th.

Parkersville, Pa.—Full bloom of plum, cherry, peach 1st, apple 4th.

Tamaqua, Pa.—Heavy thunder-storm with large hail 21st.

Ephrata, Pa.—Chimney swallows 3d; dogwood blossoms 14th.

Harrisburg, Pa.—Heavy thunder-storm 8th; showers 10th to 12th and 23d to 31st.

Tioga, Pa.—Pleasant May—first without frost in twenty years.

Grampian Hills, Pa.—Wild plum blossoms 15th, apples 16th, dogwood 27th.

Johnsontown, Pa.—Apples full bloom 7th; hail storm 10th; heavy thunder-showers 23d.

Franklin, Pa.—First thunder-shower 4th. Rain on ten days.

Connellsville, Pa.—Rain 4th to 14th; hail on three days, thunder twelve.

New Castle, Pa.—Earliest May, by ten days, since 1859.

Woodlawn, Md.—Lilac blossoms 2d, crab-apple 11th; auroras 20th, 31st.

Johnsontown, Va.—Rye heads 1st; the eighth weekly northeast storm 2d.

Zuni Station, Va.—Hail 13th; fire-fly 14th; martin 19th. May warm, with more rain than in any of the eighteen months preceding.

Bacon's Castle, Va.—Fire-fly 20th; lands flooded 27th. Month calm, warm, much rain, thunder and lightning, peanuts rotting in ground.

Comorn, Va.—Dogwood blossoms 2d, blackberry 12th. Average May rainfall for 21 years, 3.63 inches—this year 4.15 inches.

Vienna, Va.—Dogwood blossoms 3d, locust 17th, Concord grape 31st.

Piedmont, Va.—Wind, rain, hail 21st. Warm wet May. Grapes blossom 3d, locust 17th; hail 6th; wheat heads 22d.

Oxford, N. C.—More rain 26th, 27th, than at any one time in many years.

Albemarle, N. C.—Thunder showers, with hail, 13th, 20th.

Bluffton, S. C.—May dry, not hot, cotton late, oranges frozen in February.

Berne, Ga.—April and May very dry, cotton on uplands nearly ruined, vegetables on white sandy soil burnt up.

St. Mary's, Ga.—Light thunder-showers 1st, 7th, 25th, 26th, 28th.

Fish River, Ala.—Very dry May, vegetation suffering.

Jacksonville, Fla.—Timely thunder-showers 11th, 25th, 26th, 28th, revived crops. Spring 32.39 below spring average of twenty-five years.

Ocala, Fla.—Copious thunder shower 25th, saved corn and cotton.

Chattahoochee, Fla.—Very dry 7th to 26th, fogs 12th to 16th; light showers 26th, 27th, barely dampened the dust.

Gilmer, Texas.—Rain 30th, just saved the crops. A cool spring.

Oakland, Texas.—Thunder-showers 30th, revived suffering crops; first cotton blooms, corn silking 31st.

Lavaca, Texas.—First ripe plums 14th; drought till 31st. Water for drinking and cooking sold at \$1 (coin) per barrel.

Lockhart, Texas.—Thunder-storm, strong wind 30th; destructive tornado, tore up large trees, 31st.

New Orleans, La.—Even trees need the rain just set in, 31st.

Cheneyville, La.—Dry month.

Columbus, Miss.—Violent thunder-storm, with hail nearly an inch in diameter, 23d.

Marion, Miss.—Warm May, two slight rains.

Philadelphia, Miss.—Thunder shower 6th, 24th, with hail 23d.

Natchez, Miss.—Not one wholly clear day, twenty-seven cloudy, and four rainy.

Elizabethton, Tenn.—Three thunder storms on 23d, with hail.

Austin, Tenn.—Heavy thunder 2d; slight fall of snow 12th.

Clarksville, Tenn.—Drought ended by heavy thunder showers 23d.

Trenton, Tenn.—May showery, some hail 2d, 31st; plowing hindered only three or four days.

Pine Grove, Ky.—Month showery, some thunder, little rain at any time, except on the 12th and 27th; violent wind on 23d.

Shelby City, Ky.—Aurora 9th; hot 15th to 23d, ending in thunder-storm, high wind, followed by showers, timely but needed.

Salem, Ohio.—First thunder 5th; rain, hail 9th; thunder-storm, snow, heavy hail 10th.

Steubenville, Ohio.—Thunder-showers, with hail, 10th, 11th, and high wind 23d. The last frost 25th.

Gilmore, Ohio.—First thunder-storm 5th, with hail 10th, with damaging lightning 23d—horses killed and barns burned.

Cleveland, Ohio.—May averages, *heat*, 1870, 60°.11—for 16 years, 57°.35; *rain*, 1870, 1.85 inch—for 16 years, 3.57 inches. Spring averages, *heat*, 1870, 46°.81—for 15 years, 46°.34; *snow*, 1870, 20.3 inches—for 15 years, 11.81 inches; *rain*, (and melted snow,) 1870, 8.33 inches—for 15 years, 9.33 inches.

Oberlin, Ohio.—Thunder-storm, gale, hail 23d. Crops need more rain.

Kelley's Island, Ohio.—Cherries blossom 6th, pears 9th, apples 14th, quinces 21st; thunder-shower, gale 23d; auroras 27th, 30th. Month 6°.40 above May average of 11 years, and 2°.45 above the warmest May, (1860.)

Sandusky, Ohio.—Aurora 1st; wrens 6th; wheat heading 30th.

North Fairfield, Ohio.—Heavy hail-storm 23d, had to light lamps.

Westerville, Ohio.—High winds 23d; frost nipped potato tops 28th.

North Bass Island, Ohio.—Little rain, ground too dry and hard for plowing.

Bowling Green, Ohio.—Aurora 27th. Dry and warm May.

Kenton, Ohio.—Damaging thunder hail-storm, covering the ground, 23d.

Urbana, Ohio.—Aurora 1st. Month 4°.5 above May average of 19 years, and nearly 12° above May, 1869. Crops suffering from drought.

Springfield Ohio.—Drought.

Bethel, Ohio.—Thunder-shower, hail 8th; great wind, little rain 23d. Three-fourths of corn on sod destroyed by cut-worms.

Detroit, Mich.—Auroras 1st, 19th, 27th; high frost 25th.

Ann Arbor, Mich.—Orchards in full bloom 6th. Season two weeks early.

Litchfield, Mich.—Colorado potato bug 15th, (numerous, but not injurious yet;) slight frosts 28th to 31st. Very dry.

Northport, Mich.—Plum blossoms 12th, cherry 14th; aurora 17th. Finest May known.

Otsego, Mich.—Great drought.

Copper Falls, Mich.—A warm and dry May.

Vevay, Ind.—Gale, copious rain, hail, ending drought, 23d.

Muncie, Ind.—Bright aurora 20th; hail 22d. Drought.

Spiceland, Ind.—Ground dry 1st; very dry 31st.

- Laconia, Ind.*—Thunder-showers, hail 10th, 23d; rain all day 31st.
- Columbia City, Ind.*—Hottest May in many years, and very dry.
- La Porte, Ind.*—Thunder-storms 6th, 19th, 23d; aurora 19th.
- Chicago, Ill.*—Bright aurora, changeable beams, corona, 19th.
- Marengo, Ill.*—Auroras 1st, 20th; thunder-shower 5th; frosts 10th, 20th.
- Mattoon, Ill.*—Ripe strawberries 20th. Warm, dry May.
- Aurora, Ill.*—Dry month; cold nights.
- Belvidere, Ill.*—No heavy spring rains. May nearly 9° above average.
- Winnebago, Ill.*—Auroras 1st, 19th; wild plum blossoms 2d, cherry 4th.
- Wyanet, Ill.*—May smoky; crops drying up; Colorado bugs bad.
- Dubois, Ill.*—Bobolink 2d; thunder-showers 4th, 31st, with hail 23d; hail and gale 10th; a dry May till 31st.
- Mt. Sterling, Ill.*—Here a few light showers; near here, many and copious.
- Andalusia, Ill.*—Mississippi higher than in 20 years, 1st. Hot, dry May.
- Augusta, Ill.*—Thunder-showers 9th, 23d, with hail 10th; severe gale 19th.
- Manitowoc, Wis.*—Auroras 1st, 19th; thunder-storms 4th, 5th, 21st, 22d; whippoorwill 5th; frosts 27th, 28th. Warmest May in 19 years.
- Hingham, Wis.*—Apple blossoms 4th; corn planted 1st to 20th, just up 31st; potato bugs thick 25th. Warmest and driest May in 10 years.
- Genoa, Wis.*—Very dry and hot; cistern dry; corn cannot sprout.
- Embarrass, Wis.*—Frosts 8th, 10th; whippoorwill 9th; aurora 19th.
- Rocky Run, Wis.*—April and May both dry.
- Madison, Wis.*—Apples blossom 1st, cherries 2d; ground dry 3 feet deep.
- Mosinee, Wis.*—Plums blossom 1st; hail, thunder 4th. Growing weather.
- Baraboo, Wis.*—Heavy rain and hail storm 5th; heavy rains 20th, 21st; dust flying as in July or August, 31st.
- St. Paul, Minn.*—No frost in May; rains timely.
- Minneapolis, Minn.*—Strawberries ripe 29th. Warmest May yet.
- Koniska, Minn.*—Slight frosts 8th, 11th. May fine; foliage never heavier.
- Madelia, Minn.*—Fruit trees full bloom 4th. Last frost April 29th.
- Clinton, Iowa.*—Hail 7th. A uniformly warm and pleasant month.
- Waukon, Iowa.*—Heavy rain, large hail, 21st—a tub collected 5.25 inches of rain in 11 minutes, and young orchards were utterly destroyed. Colorado bugs numerous, but Paris green (with ashes) sifted on the potato vines every few days, proves effectual.
- Monticello, Iowa.*—Frost 9th; three hail-storms 10th.
- Bowen's Prairie, Iowa.*—Hail 9th, 10th, 11th. Earliest spring in many years; warm May.
- Guttenberg, Iowa.*—Very dry till rain and hail on 11th.
- Iowa City, Iowa.*—Severe storm of wind, rain, hail 5th. No May frost.
- Independence, Iowa.*—Violent hail-storms 5th, 20th; peach blossoms 11th; aurora 19th. Fine growing month. Brilliant auroras 1st, 17th.
- Waterloo, Iowa.*—Unusually warm May. The freeze of April 14th, 15th, injured fruits considerably.
- Rockford, Iowa.*—Thunder, rain, hail, and hurricane 3d.
- Algona, Iowa.*—Growing month. Finest May ever known here.
- Webster City, Iowa.*—Aurora 17th; severe thunder-storm 21st.

Boonesboro, Iowa.—Auroras 2d, 17th, 26th; bobolinks 11th. Warmest May in 14 years—average mean 56° , this May 65.3° .

Sac City, Iowa.—Rain, hail 6th, 7th; aurora 17th; fire-flies 31st.

Woodbine, Iowa.—Heavy thunder-storm 5th, with hail 30th; frost 12th.

Hematite, Mo.—Fire-flies 1st; thunder-storm, high wind 5th; from 12th to 31st, very dry.

Harrisonville, Mo.—Hard thunder-storm, with high wind, 23d.

Oregon, Mo.—Auroras 3d, 24th, 25th, 27th; thunder-storm, followed by cold wind blasting tender shoots, fruits, &c., 5th to 7th.

Leavenworth, Kas.—Thunder-storm, gale, hail, (some as large as hen's eggs,) doing much damage 19th; apple and pear blight began 28th.

Paoli, Kas.—Strong damaging wind 6th, in gusts 16th, 17th, 22d, with thunder, a little rain, hail, 23d; light showers 30th.

Laurence, Kas.—Drought till 19th; destructive wind 5th, 6th, 7th; copious rains 19th, 22d, 30th; ripe strawberries 20th.

Holton, Kas.—Highest wind in several years 5th to 8th, blasting plants and fruits; month dry till the showers of 30th.

Council Grove, Kas.—Dry till 21st; grand aurora 20th; copious rains 22d, 23d, 25th; thunder-shower 30th.

Omaha Agency, Neb.—Very heavy rains; fine growing season.

De Soto, Neb.—Damaging gale 6th; hail 20th; grapes blossoming 31st.

Bellerue, Neb.—Terrible wind 5th, 6th; frost 12th; aurora 17th.

Nebraska City, Neb.—Warm south wind 14th, 15th, 16th; thunderstorms 18th, rain very heavy 30th.

New Castle, Neb.—Thunder-storm, hail, 20th.

Chico, Cal.—Sharp frost 17th; heavy thunder-storm 25th.

Visalia, Cal.—Grapes blossom 6th; thunder-storm, hail, 16th.

Deer Lodge City, Mont. Ter.—Aurora 1st; heavy frost 3d; snow 16th; ice 18th; cottonwood in leaf 26th; furious snow-storm on 29th, ending June 1st, lay 5 inches in valley and 2 to $3\frac{1}{2}$ feet on mountains—worst May storm ever known here. No lightning in May.

Denver, Col. Ter.—A cloudy, dry, windy May, none like it since 1863, the year before the great floods.

Portland, Oregon.—A pleasant May, with a few light showers.

MONTHLY REPORT



OF THE

DEPARTMENT OF AGRICULTURE,

FOR

JULY, 1870.



WASHINGTON:
GOVERNMENT PRINTING OFFICE,
1870.

MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE, STATISTICAL DIVISION,
Washington, D. C., July 19, 1870.

SIR: I herewith submit for publication the report of this division for the current month, embracing a condensed statement of the condition of the growing crops, together with a variety of extracts from the correspondence of the Department, with articles on bone fertilizers, the Alvarado beet-sugar factory, prizes for essays on agriculture, sales of Kentucky stock, receipts and shipments at Union stock yards at Chicago, the crops in Germany, San Domingo, culture of madder in Smyrna, cinchona cultivation in India, wheat culture in England, potash as a manure, wages of Irish farm labor, agricultural statistics of colonies of Great Britain, meteorological tables and notes, &c.

J. R. DODGE,
Statistician.

HON. HORACE CAPRON,
Commissioner.

CONDITION OF CROPS IN JULY.

WHEAT.

The condition of wheat is above an average in the following States: Maine, (spring,) 3 per cent.; New Hampshire, 2; Virginia, (winter,) 1; North Carolina, 1; Georgia, 10; Alabama, 8; Tennessee, 6; West Virginia, 3; Kentucky, 3; Kansas, 2; Nebraska, 2; Oregon, 3; an average is indicated in South Carolina and Arkansas; and the following States fall below an average prospect: Vermont, (spring,) 9 per cent.; Massachusetts, 3; New York, 12; New Jersey, (winter,) 20; Pennsylvania, (winter,) 9; Delaware, 35; Maryland, 30; Mississippi, 2; Texas, 13; Missouri, 15; Illinois, (winter,) 5 and (spring,) 25; Indiana, (winter,) 10; Ohio, (winter,) 9; Michigan, 15; Wisconsin, (winter,) 15 and (spring,) 26; Minnesota, 15; Iowa, 15; California, 5; Oregon, 4.

The great wheat-growing districts all show a reduction in condition, rendering it certain that the crop of the year will be materially less than that of 1869. Future reports of condition at and after harvesting are still elements of the ultimate estimate, but the average depreciation of 13 per cent., and the diminution in breadth of about 6 per cent., would make the present estimate about 210,000,000 bushels, the decrease being at least 48,000,000.

In New Jersey a change for the worse came with the hot, moist weather of June. Much of the crop was blighted in Burlington County, and foggy weather on the sea-coast wrought great injury.

Some unevenness of yield appears in Pennsylvania; one-third of the crop in Union County has been destroyed by hail; rust and weevil were injurious in Montgomery; storms beat down the grain in Lehigh; the weevil did some damage in Luzerne. Late wheat was more injured by heavy rains than that which was sown early.

From Delaware and Maryland serious complaints of winter-killing were received, followed by fine growth in April and May, and the prevalence of rust, scab, and blight in June, after a long season of east winds and foggy or rainy weather.

Late wheat was injured slightly by heavy rains, and in places by rust in Virginia and the Carolinas, but the crop as a whole is excellent in quality and large in quantity. In Georgia this crop is regarded as one of the best ever known; in Clayton County, the best harvested in twenty years; in Columbia, the best raised in ten years; in Newton, "equal to any crop before grown." Alabama was equally fortunate; and a fair yield on a narrow breadth sown was obtained in Mississippi. Wheat sustained injury in Texas from wet weather in the Red River Valley, and in more southern counties from drought.

A large yield is reported in many portions of Kentucky; in Russell County twenty per cent. more than last year; the June rains damaged the crop in Boyle and Nelson; it was greatly injured by smut in Butler; the fly and rust were injurious in Shelby; drought in May impaired the vitality of the plant in Greenup; the midge destroyed many fields in Scott. A fair average exists in Kentucky, as a whole, in quality and quantity.

In Missouri, on the upland, the wheat is thin, and the straw short, but the kernel is generally plump, well matured, and heavy. On the Mississippi bottoms, as in Lewis, there has scarcely ever been a better crop, while on adjoining upland prairies it was in many cases worthless, and the fields given up to other crops.

The reports from Illinois indicate a short crop of excellent quality. As specimens, Perry returns "less than an average yield per acre, but the quality enough above the average to make a full crop;" Stephenson expects about two-thirds of a crop in quantity; "thin on the ground" in Alexander; "quality superior" in Fayette; in St. Clair, "although thin on the ground, the grain is perfect;" in Marshall County, where little rain has fallen in three months, the straw of winter wheat is short and the heads long, and spring wheat is thin but the kernel is good; one-third less acreage reduces the quantity in Bureau; the quality is so much better than usual in Stark, that an average crop is expected; "large and well filled on thinly set plants" is reported of Jersey; in Hancock, as good as last year, but less in acreage; in Williamson, "a good yield, free from smut or rust;" in Randolph, two-thirds of a crop of good quality. The injury by drought, if not severe, is quite general in this State.

The tenor of Indiana returns is similar, with somewhat less of the despondent element. The returns are more variable in character than those of Illinois. In some counties, as Randolph and Delaware, but half a crop is expected, while in Bartholomew the claim is for "a full average, as compared with the last five years, in quantity, and above the average in quality," and in Vanderburg "the yield is fully one-tenth above the usual average." The fly committed some depredations in Morrison, and a few fields "were injured by the midge" in Washington.

In Ohio some complaint of thin stand prevails, with the same indications of heavy heading and soundness of kernel. "A short crop of excellent quality" would be a brief summary of the returns of this State.

The quality of Michigan wheat is superior, with a reduction in yield of 15 per cent. It rusted so badly in Lenawee County that much of it is barely worth cutting. Livingston shows a fine plump kernel with only six-tenths of the usual quantity. Winter grain in Sanilac has also done badly.

The high fame of Wisconsin wheat fields is somewhat tarnished this year. "Not more than half a crop" is reported from Columbia County; "spring wheat almost a failure" in Walworth; in some parts of Eau Claire "an entire failure;" in Sheboygan "winter wheat is filling well, spring strong and heavy." The drought has been very injurious in this State.

Iowa has suffered from dry weather, yet in a less degree than other great centers of wheat production. The prevailing characteristics of thin setting, low heading, and heavy filling are noticed here as elsewhere. In Marshall County early sown fields are doing well; late sown "almost a failure;" in Montgomery County "there will be an average crop, about fifteen bushels to the acre;" in Winnebago, wheat sown on new ground is poor and suffering from rain, while that upon old ground with deeper and more thoroughly pulverized soil is doing well. The complaint of great heat and long-continued drought is universal. There is no complaint of blight, smut, scab, rust, fly, or chinch-bug.

Kansas, formerly stigmatized as a desert, perfects an average crop of superior quality in a year of general drought. "A large yield, heavier than for years past," is reported from Doniphan; "an extra crop as to quality and quantity in Coffey." The crop in Osage is injured from the effects of severe frost in March.

In Nebraska spring wheat is looking well, but winter grain is not flourishing.

In Oregon and California there will be some reduction in quantity, but the quality will be superior. In Contra Costa County, California, unexampled destruction by squirrels is represented. The local journal estimates the loss at one-eighth of the crop, valued at \$100,000.

CORN.

The increase in the breadth of corn is greater than the decrease in acreage of wheat. It may be placed at 5 per cent., or about 1,750,000 acres. There appears to be a very slight increase in New England; about 2 per cent. in the Middle States; a decrease in the cotton States, east of the Mississippi; an advance of 7 or 8 per cent. in Southern States west of the Mississippi, and a still larger increase in the heart of the west. It is estimated at 10 per cent. in Illinois, 10 in Indiana, 5 in Ohio, 2 in Michigan, 8 in Wisconsin, 20 in Minnesota, 15 in Iowa, 25 in Nebraska, and 15 in Kansas.

In condition this crop is above an average in almost every Western State. Nebraska is a decided exception. The New England and the Middle States present very uniform returns, full of high promise for this crop. In some cases, as in Columbia and Orleans, New York, the prospect is better than for several years. In the Carolinas wet weather has affected the appearance of corn, and prevented its cultivation and the destruction of grass and weeds. In the other cotton States the crop is vigorous, of good color, and fine promise. In parts of Alabama it is less advanced than usual. In Monroe, Mississippi, corn has been drowned out on low lands by excess of rain, and some of it replanted. Growth is at some points in Mississippi and Arkansas somewhat obstructed by grass, in consequence of wet weather; while in Claiborne County, Mississippi, drought threatens to shorten the crop.

Throughout the West the indications of a good crop have never been so general since the inauguration of official crop returns. "Never so many acres of fine corn in the county," as reported of McDonough, Illinois, would be a fair report of many a county in all the great corn-producing States. A few exceptions are reported. The effects of drought are lamented in Knox, Grundy, and Jo Daviess, Illinois; in Clay, Missouri, and in Jefferson, where corn "is tasseling out, and not a foot high;" in Page, Benton, and Appanoose, Iowa. "A poor stand and unpromising appearance" is reported in Riley, Kansas. In White, Indiana, the crop is represented as almost a total failure. Cut-worms, in Highland, Ohio, have almost entirely destroyed many fields.

COTTON.

The increase of acreage of cotton, as indicated by the returns of county correspondents, averages 12 per cent., and aggregates nearly a million of acres. It is almost literally true that "the people are devoting all their energies to the culture of cotton." The condition of the crop is so far favorable for a good yield—fully an average in Georgia, Alabama, Louisiana, and Arkansas; slightly below an average in the Carolinas, Florida, Mississippi, Texas, and Tennessee. North Carolina had a surplus of rain in June, which in places has occasioned injury, especially in the counties of Martin, Carteret, Edgecomb, Hertford, Beaufort, Greene, Rowan, and Mecklenburg. The plant is late and small in parts of South Carolina, but thrifty, growing rapidly in recent favorable weather. To defective seed or drought in planting time, a bad stand is attributed in many places, and growth has been retarded by excessive rain. Heavy rains in Georgia have done some damage. In Clayton and Spaulding Counties fields have been badly infested with lice, which threaten failure in some instances. To the influence of commercial fertilizers is attributed the promising appearance of the plant in many fields. In Alabama the crop is generally flourishing, though local reports are quite variable. Complaint of injuries from hail or rain storms are reported in Dallas, Macon, and Etowah, and from lice in Sumter and Randolph. While the crop is reported as backward in some counties, it is "two weeks in advance of last season" in Conecuh. In Mississippi heavy rains and cool nights have proved unfavorable in the counties of Neshoba, Washington, De Soto, Yalabusha, and La Fayette. Lice are reported in De Soto and La Fayette. Heavy rains, more favorable for the growth of grass than of cotton, and obstructive of clean culture, have been injurious in Arkansas. In the Red River region of Texas cotton is generally flourishing, with some injury from lice.

Neither the caterpillar nor boll-worm has appeared, and there are few drawbacks which a few weeks of favorable weather cannot repair. With an average season the present acreage should give nearly three and a half millions of bales; with one of the extraordinary length of the last, the product would be little short of four millions—which was of so remarkable a character for continued growth and late picking that our October estimate, a reasonable one at the time, of 2,700,000 bales, was advanced at the close of the season to 3,000,000.

OATS.

This crop is looking better than would be expected in view of the heat and drought of the season. Its condition is a full average in about

half the States, including all of New England, (except Vermont,) New Jersey, Pennsylvania, Maryland, Virginia, North Carolina, Alabama, Mississippi, Arkansas, Tennessee, West Virginia, Kentucky, and Oregon; it is less promising in New York, South Carolina, Georgia, Florida, Texas, and all the Western States, in which the deficit ranges from 9 to 23 per cent. During the season of growth there was abundant rain on the Atlantic coast between New Jersey and North Carolina, and throughout the mountain section of the South, and on the Alleghanian plateau. In the Ohio Valley drought and heat have proved injurious. The quality will generally be very good.

TOBACCO.

There is an increase of acreage in Virginia and Kentucky. Our returns show an aggregate increase of about 5 per cent. A slight decrease is indicated in Ohio, Indiana, and Missouri. The appearance of the crop is superior in Kentucky, Virginia, North Carolina, and Georgia. Drought has injured it on the north side of the Ohio.

FRUITS.

The prospect for apples is unusually good from Maine to Georgia, except in Pennsylvania and Maryland; and Tennessee is the only interior State which can claim an average. In Pennsylvania much complaint is made of premature falling from the trees.

Peaches are somewhat less abundant than apples. The prospect in New Jersey is returned at 2 per cent. above an average. Delaware will not have a full yield. Kent County reports but half a crop. Illinois is placed at 5 per cent. below an average, and Michigan at 10. Peaches and other fruits were destroyed by frost in March throughout the Gulf States. Grapes generally promise remarkably well. A full average is indicated in California, Missouri, and Ohio, and very few States make unfavorable returns.

The apple and peach crops are greatly infested by insects in the Middle States.

Table showing the condition of the crops, &c., on the 1st day of July, 1870.

| STATES. | CORN. | | WHEAT. | | RYE. | | OATS. | | BARLEY. | | PAS- TURE. | CLOVER. | TIMOTHY. | POTATOES (Solanum tuberosum). | | POTATOES (Batatas edulis.) | |
|---------------------|--|---------------------------------|--|--|--|---|---|---|---|---------------------------------|---------------------------------|--|---------------------------------|--|---------------------------------|--|---------------------------------|
| | Average com- pared with last year. | Average con- dition, July 1. | Average con- dition of spring wheat, July 1. | Average con- dition of winter rye, July 1. | Average con- dition of spring rye, July 1. | Average con- dition of winter oats, July 1. | Average con- dition of spring barley, July 1. | Average con- dition of winter barley, July 1. | Average con- dition of spring barley, July 1. | Average con- dition, July 1. | Average con- dition, July 1. | Average com- pared with last year. | Average con- dition, July 1. | Average com- pared with last year. | Average con- dition, July 1. | Average com- pared with last year. | Average con- dition, July 1. |
| Maine..... | 10.3 | 11 | 10.2 | 10.3 | 10.3 | 10.9 | 10.6 | ..... | 10.6 | 8.5 | 8.6 | 9.5 | 10.3 | ..... | ..... | ..... | ..... |
| New Hampshire..... | 10.4 | 11 | 10.3 | 10.3 | 10.3 | 10.9 | 10.3 | ..... | 10.3 | 9.7 | 9.2 | 10 | 10 | ..... | ..... | ..... | ..... |
| Vermont..... | 9.8 | 11 | 9.7 | 8.5 | 9.5 | 9.1 | 9.2 | ..... | 9.2 | 8.7 | 9.2 | 9.5 | 10 | ..... | ..... | ..... | ..... |
| Massachusetts..... | 10 | 11 | 9.7 | 10.1 | 10.1 | 10.3 | 10.1 | 9.6 | 10.1 | 10.4 | 10.5 | 10.5 | 10.6 | ..... | ..... | ..... | ..... |
| Rhode Island..... | 9.8 | 10 | ..... | 10.2 | 10 | 10.5 | 10 | 11 | 11 | 11 | 10.5 | 9.5 | 10.5 | ..... | ..... | ..... | ..... |
| Connecticut..... | 10.2 | 10.8 | 8.9 | 8.7 | 9.2 | 10.4 | 8.7 | 8.8 | 10 | 10.4 | 10.7 | 8.7 | 9.8 | ..... | ..... | ..... | ..... |
| New York..... | 10.3 | 10.1 | 8 | 9.1 | 9.1 | 10.3 | ..... | ..... | ..... | 8.5 | 8.2 | 9.1 | 9.4 | ..... | ..... | ..... | ..... |
| New Jersey..... | 10.2 | 10.3 | 9.1 | 8.7 | 9.5 | 10.5 | 10.4 | 10 | 10.4 | 10.6 | 10.4 | 9.3 | 10 | ..... | ..... | ..... | ..... |
| Pennsylvania..... | 10 | 10 | 6.5 | ..... | ..... | 8 | ..... | ..... | ..... | 10 | 10.3 | 9.2 | 10 | ..... | ..... | ..... | ..... |
| Delaware..... | 10 | 8.9 | 7 | 9 | ..... | 10.8 | ..... | 11 | ..... | 11.3 | 11.2 | 9 | 10 | ..... | ..... | ..... | ..... |
| Maryland..... | 10.5 | 9.9 | 10.1 | 10.1 | 10.1 | 10.8 | ..... | ..... | ..... | 11.1 | 11.3 | 8.6 | 9.8 | ..... | ..... | ..... | ..... |
| Virginia..... | 9.5 | 9.6 | 10.1 | 9.7 | 10.1 | 10.9 | ..... | ..... | ..... | 10.9 | 10.9 | 10 | 10.6 | ..... | ..... | ..... | ..... |
| North Carolina..... | 9.7 | 9.6 | 10 | 10.2 | 10 | 9 | ..... | ..... | ..... | 8.3 | 10.9 | 9.5 | 10 | ..... | ..... | ..... | ..... |
| South Carolina..... | 9.9 | 10.8 | 11 | 10.6 | 10.6 | 9.7 | ..... | ..... | ..... | 10.4 | 10.4 | 10 | 10 | ..... | ..... | ..... | ..... |
| Georgia..... | 10.7 | 11 | ..... | 10 | 10 | 9.2 | ..... | ..... | ..... | 11 | 11 | 10.1 | 9.8 | ..... | ..... | ..... | ..... |
| Florida..... | 9.3 | 10.4 | 10.8 | 10.2 | 10.7 | 10.7 | ..... | ..... | ..... | 10.6 | ..... | 9.5 | 7.6 | ..... | ..... | ..... | ..... |
| Alabama..... | 9.9 | 10.5 | 9.8 | 9.8 | 9.8 | 10.7 | ..... | ..... | ..... | 11.9 | 10.7 | 10.5 | 9.5 | ..... | ..... | ..... | ..... |
| Mississippi..... | 10.7 | 10.6 | ..... | ..... | ..... | 10 | ..... | ..... | ..... | 11 | 10.6 | 10.5 | 10 | ..... | ..... | ..... | ..... |
| Louisiana..... | 10.7 | 10.3 | 8.7 | 9.6 | 9.6 | 9.6 | ..... | ..... | ..... | 10.4 | 10.4 | 10.1 | 10.1 | ..... | ..... | ..... | ..... |
| Texas..... | 10.9 | 11 | 10 | 10 | 10 | 10.7 | ..... | ..... | ..... | 10.8 | 10.8 | 10.9 | 10.3 | ..... | ..... | ..... | ..... |
| Arkansas..... | 10.7 | 10.1 | 10.6 | 10 | 10 | 11.5 | ..... | ..... | ..... | 11.3 | 11.3 | 10.6 | 10.3 | ..... | ..... | ..... | ..... |
| Missouri..... | 10.7 | 10.5 | 10.3 | 9.6 | 10.5 | 11.5 | ..... | ..... | ..... | 11 | 11 | 10.6 | 10.3 | ..... | ..... | ..... | ..... |
| West Virginia..... | 10.4 | 10.5 | 10.3 | 10.4 | 11.1 | 11.1 | ..... | ..... | ..... | 11.1 | 10.6 | 10.5 | 10.3 | ..... | ..... | ..... | ..... |
| Kentucky..... | 11.5 | 10.7 | 8.5 | 9.4 | 8.8 | 7.7 | ..... | ..... | ..... | 8.3 | 7.4 | 9.9 | 9.2 | ..... | ..... | ..... | ..... |
| Illinois..... | 11 | 10.6 | 9.5 | 9.5 | 9.5 | 8.5 | ..... | ..... | ..... | 8.6 | 7.1 | 9.7 | 9.1 | ..... | ..... | ..... | ..... |
| Indiana..... | 11 | 10.5 | 9 | 9.5 | 10.5 | 8.7 | ..... | ..... | ..... | 8.6 | 8.4 | 9.1 | 9.4 | ..... | ..... | ..... | ..... |
| Ohio..... | 10.5 | 10 | 9.1 | 9.5 | 9.6 | 9 | ..... | ..... | ..... | 9.1 | 8.4 | 9.3 | 10.1 | ..... | ..... | ..... | ..... |
| Michigan..... | 10.2 | 10.3 | 8.5 | 9.2 | 9.6 | 9.5 | ..... | ..... | ..... | 9.8 | 8.4 | 9.3 | 9.2 | ..... | ..... | ..... | ..... |
| Wisconsin..... | 10.8 | 10.5 | 8.5 | 8.1 | 9 | 8 | ..... | ..... | ..... | 8.4 | 8.8 | 9.2 | 8.8 | ..... | ..... | ..... | ..... |
| Minnesota..... | 12 | 10.6 | 10 | 10 | 9 | 8.5 | ..... | ..... | ..... | 7.1 | 7.5 | 9.4 | 9.4 | ..... | ..... | ..... | ..... |
| Iowa..... | 11.5 | 10.5 | 9.1 | 10.3 | 9.1 | 9.5 | ..... | ..... | ..... | 9.3 | 9.3 | 10.3 | 9.1 | ..... | ..... | ..... | ..... |
| Kansas..... | 11.5 | 10 | 10.2 | 10.3 | 10.3 | 8.8 | ..... | ..... | ..... | 10.1 | 10.4 | 10.3 | 9.7 | ..... | ..... | ..... | ..... |
| Nebraska..... | 12.5 | 8.1 | 10.2 | 9.6 | 9.6 | 8.4 | ..... | ..... | ..... | 9.6 | 8.5 | 10.1 | 9.1 | ..... | ..... | ..... | ..... |
| California..... | 10 | 9.7 | 9.6 | 9.2 | 10 | 9.1 | ..... | ..... | ..... | 8.6 | 10.3 | 10.1 | 9.4 | ..... | ..... | ..... | ..... |
| Oregon..... | 9.7 | 9.8 | 10.3 | 10 | ..... | 10.3 | ..... | 10.4 | 9.5 | 11 | 10.4 | 10.7 | 12 | ..... | ..... | ..... | ..... |

Table showing the condition of the crops, &c.—Continued.

| STATES. | BEANS. | | SORGHUM. | | SUGAR CANE. (Not sorghum.) | TOBACCO. | COTTON. | WOOL. | APPLES. | PEACHES. | GRAPES. | STRAW- BERRIES. | CRAN- BERRIES. |
|---------------------|--|---------------------------------|--|---------------------------------|--|---------------------------------|--|-------|---------|----------|---------|--------------------|-------------------|
| | Average com- pared with last year. | Average con- dition, July 1. | Average com- pared with last year. | Average con- dition, July 1. | Average com- pared with last year. | Average con- dition, July 1. | Average com- pared with last year. | | | | | | |
| Maine..... | 10 | 10.3 | | | | | | | 12.2 | | 10.4 | 9.7 | 9 |
| New Hampshire..... | 10.3 | 10.2 | | | | | | 9 | 12 | | 10 | 12.5 | 9 |
| Vermont..... | 9.4 | 10 | | | | | | 8.7 | 10.7 | | 10 | 12.6 | |
| Massachusetts..... | 10 | 10.1 | | | | | | 9.2 | 12 | 11 | 11 | 10 | 9 |
| Rhode Island..... | 10 | 10 | | | | | | 10 | 10.5 | 12 | 10 | 10 | |
| Connecticut..... | 10 | 10.2 | | | | 10.7 | 10.2 | 9.6 | 12 | 10.6 | 10.8 | 10.6 | 10 |
| New York..... | 9.8 | 9.7 | | | | 9 | 8.5 | 9 | 10.6 | 10.5 | 10.1 | 8.8 | 10 |
| New Jersey..... | 9.7 | 10.2 | | | | | | 9.9 | 11 | 10.2 | 10.3 | 9.2 | 9.4 |
| Pennsylvania..... | 9.8 | 10.3 | | | | 10.2 | 10.1 | 9.1 | 9 | 9.2 | 9.7 | 9.2 | 10 |
| Delaware..... | 10 | 11 | | | | | | 10 | 12 | 5 | 6 | 12 | |
| Maryland..... | 10 | 9.6 | | | | 10.6 | 9.6 | 9.9 | 9.2 | 9.6 | 9.7 | 9.5 | |
| Virginia..... | 10.6 | 10.2 | | | | 10.5 | 10.5 | 10 | 11 | 9.9 | 10.9 | 10 | |
| North Carolina..... | 10.2 | 10.3 | | | | 10.9 | 10.3 | 9.5 | 10.6 | 9.5 | 9.8 | 11.7 | 10 |
| South Carolina..... | 10 | 9.1 | | | | 10.6 | 9 | 10.8 | 10.5 | 8.1 | 12.5 | 8 | |
| Georgia..... | 9.8 | 10.3 | | | | 11.6 | 11.6 | 10.1 | 7.5 | 8.4 | 10.3 | 9 | |
| Florida..... | 10 | 9.5 | | | 9.8 | 10.3 | | 9.8 | 7.5 | | | | |
| Alabama..... | 10.5 | 10.2 | | | 11.5 | 10.8 | | 9.3 | 8.2 | 5.7 | | 8.1 | |
| Mississippi..... | 11 | 10.3 | | | 11 | 10 | | 10.2 | 9.2 | 5.3 | | | |
| Louisiana..... | | | | | 11.1 | 9.6 | | 9.5 | 9.2 | 7.1 | 12 | 11.4 | |
| Texas..... | | | | | 9.3 | 8.3 | | 9.7 | 8.6 | 3.6 | 8.6 | 11.2 | |
| Arkansas..... | 10.3 | 10 | | | | 10.4 | 10.2 | 10.5 | 8 | 3.1 | 7.7 | 10.7 | |
| Tennessee..... | 10.3 | 10.3 | | | | 10.4 | 10.4 | 10.3 | 10.7 | 8 | 9.5 | 9 | |
| West Virginia..... | 10.5 | 10.9 | | | | 11 | 11 | 9.8 | 8.5 | 8 | 10.4 | 11 | |
| Kentucky..... | 10.3 | 10.3 | | | | 10.7 | 10.2 | 10 | 10.3 | 10.7 | 10.7 | 10.7 | |
| Kentucky..... | 10.4 | 10.4 | | | | 11 | 11 | 10 | 6 | 6.5 | 10 | 7.4 | |
| Missouri..... | 10.2 | 9.2 | | | | 9.5 | 9 | 9.9 | 9 | 9.3 | 10.1 | 7.7 | |
| Illinois..... | 9.6 | 9.4 | | | | 10.2 | 9.8 | 8.7 | 9 | 8.5 | 10 | 7.7 | |
| Indiana..... | 10.1 | 9.9 | | | | 9.2 | 9.5 | 9 | 7.8 | 7.8 | 10 | 7.9 | |
| Ohio..... | 9.5 | 10.1 | | | | 9.9 | 9.5 | 8.9 | 9.4 | 9 | 9.1 | 9.2 | |
| Michigan..... | 10 | 9.9 | | | | | | 9.7 | 7.6 | 9.8 | 9.8 | 7.7 | 9.3 |
| Wisconsin..... | 9.5 | 9 | | | | 8.4 | 8.4 | 10 | 9.4 | | 8.4 | 8.6 | |
| Minnesota..... | 10.5 | 10 | | | | | | 8.5 | 6.9 | 9.5 | | 6.2 | |
| Iowa..... | 10.2 | 9.5 | | | | | | 10 | 7.7 | 9.8 | | 9.5 | |
| Kansas..... | 10.9 | 10.1 | | | | | | 10.6 | 7.5 | 10 | | 8.7 | |
| Nebraska..... | 10.8 | 9.1 | | | | | | 11.1 | 8.7 | 9 | | 10.1 | |
| California..... | 9.8 | 9.5 | | | | | | 10.3 | 8.3 | 8.6 | | 10.7 | |
| Oregon..... | 9.9 | 10.1 | | | | 10.2 | 10.5 | | | | | | |

EXTRACTS FROM CORRESPONDENCE.

DEPARTMENT SEEDS.

Mendocino County, Cal.—One year ago last spring, or late in the winter, I received from you a small quantity of the white and of the black Schonen oats, and some barley. I planted them soon after receiving them, but neither variety matured—growing not more than twelve or fifteen inches in height. Not fully satisfied with the experiment, I determined to leave the ground unoccupied and see what a volunteer crop would do. The white oats did not seed the land sufficiently thick to prevent the weeds from overrunning most of the ground; still, some spots produced excellent crops. The barley also failed to get a good footing on a portion of the ground, but other portions were well seeded. This barley is low, and the heads of middling length, but well filled. Of the black Schonen oats, however, I have a more encouraging account to give. I had it cut to-day, and think I never saw a finer crop of oats taken from any ground. The heads are large, the grain abundant and very firm, and grows to a height I have never before seen. I think one-half the stalks would measure, from the ground up, six and one-half feet, and none of them were short. The conclusions I have arrived at are these: This variety of grain will not mature in our dry summer unless it has the advantage of early sowing, so that the roots may become strong during the winter. I believe it possesses one quality which should recommend it to all California farmers. There is a great deal of grain—wheat, oats, and barley—sown in this State expressly for hay. I have never seen a crop of any kind of grain offer so fair a prospect for a hay crop as this did in the haying season. I am confident that it would have produced hay at the rate of four to five tons to the acre, and that of an unexceptionable quality.

A year ago last fall you sent me one peck of Talavera wheat. As I was then engaged in other business, and gave but little attention to my farm, I let all go to various hands except one quart, which I planted myself. My success that year was only middling, though the heads and grain were unusually large and healthy; but I carefully gathered the product and planted it last fall. I have not yet harvested it, but the apparent result is superior to anything I ever saw on a large scale. It covers about one-quarter acre, stands near five feet high, and the heads vary from four to five inches in length. The straw, chaff, and grain are of a light color, and the grain unusually large. Its flouring quality of course I do not know. Altogether, I believe its introduction among us would be a vast improvement on our old varieties. I believe, however, that my little crop is all that is to be found in the county, the other having been allowed to go to waste and mix with other varieties. I shall probably be able to save seven or eight bushels.

In the quart of Talavera wheat I planted a year ago last fall, I found, when harvesting it, that two grains of an entirely different variety had found their way into it. Something over thirty stalks grew from the two grains. It has a short stalk, growing, in good ground, from two and a half to three and a half feet high; red chaff and red grain, but when crushed gives evidence of superior whiteness and fineness of flour. I carefully saved the seed from these few stalks, planted them, and they are now just ripening. The heads vary from two and a half to three and a half inches in length, the grains stand at right angles with the stalk, and are more closely compact than any other wheat I remember to have seen. The heads somewhat resemble the club-head wheat, but

the difference is sufficiently plain to attract the notice of even a careless observer. I have some reason to believe it is a more valuable grain for this climate than even the Talavera. I shall have about fifty pounds of it.

Buckingham County, Va.—The package of Arnautka spring wheat received from the Department of Agriculture is looking remarkably well, and promises a good yield; but for its long, turkey gobbler-like beard I think it would become a very popular wheat with a considerable portion of our population. We have a large number of migratory tenants, who usually remove to their new homes in the fall, when it is too late to sow winter wheat. They are pleased at the idea of my introducing a new variety of wheat, of which they can raise their own flour in a few months of the same year.

Princess Anne County, Va.—The Schonen oats are superior to any ever grown in this county. I hope to save them in good order, and will report results.

HOPS.

Juneau County, Wis.—Hops are quite extensively grown in this county. The crop is light compared with last year; the vine has been injured by the hop worm, comparatively a new enemy to hops in this section. One-half of an average crop is all that can be expected this harvest.

Richland County, Wis.—Hops in this county have been very badly injured by grubs. There will not be over one-half a crop this year.

FLAX.

Lafayette County, Wis.—Flax is raised in this county to a great extent, and is considered quite remunerative. The seed is worth about \$2 per bushel, and the straw \$8 per ton. The yield of seed is about 10 bushels per acre.

Polk County, Oregon.—Flax grows well in this county, and is considerably cultivated for the seed. We have an oil mill at Salem, in an adjoining county, and a factory in progress for the manufacture of the lint. Hemp grows tolerably well, but is little cultivated.

FRUITS.

Penobscot County, Me.—Prospect of more than an average of pears and plums.

Middlesex County, Conn.—Apples and pears look more promising than for the past four years.

Ocean County, N. J.—Cranberries were injured in some bogs by the great heat of last June.

Randolph County, Ala.—The Scuppernong grape is growing finely. One gentleman has four acres planted.

Lincoln County, Miss.—Peaches a failure; about one-twelfth of a crop. Crop of plums fair.

Holmes County, Miss.—Fruit never better.

Wilkinson County, Miss.—Most peaches were destroyed by frost, but in places where they were not thus injured the crop is remarkably fine.

Ellis County, Texas.—Many varieties of the grape have rotted badly from wet weather; in some cases, one-half of the berries in the cluster.

Dallas County, Texas.—The peach crop is an entire failure, from late frosts in April.

Morgan County, W. Va.—The fruit crops are more promising than ever known before.

Russell County, Ky.—The apple crop the finest for ten years.

Callaway County, Ky.—Fruit crop not as good as at first supposed.

Mississippi County, Mo.—Fruit killed by late frosts.

Montgomery County, Ill.—There will be but a small crop of winter apples, and not more than one-third of a crop of early apples. Peach trees are well laden.

Hancock County, Ohio.—A fair amount of apple, peach, pear, and cherry bloom, but nearly all falling off.

Hardin County, Ohio.—If the apple trees continue to cast their fruit the crop will be a complete failure. Peaches are doing better.

Miami County, Ohio.—Grape crop superior to that of any former year.

Lake County, Ohio.—Prospect for peaches the best for many years.

Butler County, Ohio.—Peaches almost a failure. There is some complaint of "grape rot."

Douglas County, Nevada Ter.—Apples, pears, and plums were all killed by frost in May.

THE FRUIT, ETC., DAIRY IN EL DORADO COUNTY, CALIFORNIA.

El Dorado County, Cal.—Much attention is now given to the culture of the mulberry. The climate and soil seem to be well adapted to its growth. The dairy business is also fast increasing. Four thousand cows are this season employed in the business in this county. Our mountain valleys afford green grass during the summer months, while the river valleys are dry. It is certain, from fifteen years' experience, that the foot hills of the sierras afford a hardier and better quality of fruit than any other portion of the State. Two tons is an average crop of grapes to an acre. Five tons can be grown, with a little irrigation, of the superior quality of grapes.

CHEESE FACTORY IN OREGON.

Lane County, Oregon.—The first cheese factory in the county has just been started, and is making a good article. Our wool is mostly ordinary, and our breeds of hogs not sufficiently select. The immigration, now increasing, will, it is hoped, elevate the character of farm products.

MADISON COUNTY, ARKANSAS.

Madison County, Ark.—This section, I think, is the Switzerland of America. The climate is mild and genial; never very cold in winter, and the summers are made pleasant by ever-stirring breezes. During thirty-six years the thermometer has not indicated above 96° in the hottest weather, and rarely below zero in winter. The country is mountainous, and its general appearance is rough, interspersed with numerous fertile valleys, that yield from 40 to 80 bushels of corn per acre; wheat is the staple. Fruits of all kinds do well, and there has not been a total failure in the memory of the oldest inhabitant. This section will eventually be the fruit garden of the Southwest. The people are sadly behind the times in scientific farming, following the old-fashioned way, and using old-fashioned implements. I do not think there is a reaper or mower in the county, but farmers are beginning to awake to a sense of their duty. We need new seeds, new methods, more enterprise, and greater energy.

EMIGRATION TO TEXAS.

Montgomery County, Texas.—Immigrants continue to pour into the State. Every paper published in Northern Texas speaks of its unusual continuance with expressions of regard. Heretofore immigration ended in the spring months early. The "tide" set into Texas very early last year, beginning in August. It is currently stated by letters and other sources of advice that an immense immigration to Texas will take place this winter. Among the present immigrants are a proportion from Tennessee, Kentucky, Illinois, Indiana, Wisconsin, &c. We hear, too, that the coming winter will bring us numbers of immigrants from the Eastern States, the public mind being better informed there now in regard to the reputed lawlessness prevailing. Farmers and other immigrants from the Eastern States will be duly welcomed in all parts of Texas within the frontier. We need the practical, adaptative, inventive genius of thousands of our northern brethren to help us develop and build up our State toward the wealth and prosperity its resources and capacities insure to us some day. None could give us better help than practical northern farmers and business men. I have wished so much that the "spirit would move" some of them to come and set up a cheese factory in an appropriate district of the State. Our condition is peaceable all over the State, except the immediate Indian frontier. Person and property are as safe everywhere as in other States, and opinions as fully enjoyed and expressed. The demoralization incident to the war is passing rapidly away. The most of the malefactors have been killed—many of them by each other—and their example and force diminished; those loosely inclined are restrained. I can safely say, from personal as well as other information derived from reliable sources, that the people of Texas, including the new-comers, are all cultivating the arts and desires of peace, and all that we now need are good laws, and good officers to carry them into effect. We are looking forward to the moral benefits to be derived from greater and more direct railroad connections east and west.

CHINESE LABORERS IN ARKANSAS.

Arkansas County, Ark.—This county has received a lot of Chinese from Hong Kong. The planters seem well pleased with them; they do their work well, and are careful and very cleanly in their personal attire. Should these prove a success, we will be able to get all the labor wanted, and can then work plantations for wages and be able to keep them in repair, which is impossible when working on shares. I do not think hands work as well this year as last, although nearly all planters assert that they do.

BIRDS AND THE COTTON WORM.

Montgomery County, Texas.—Our friend, the cotton worm, (in one sense friend, in "restraining excess of production,") has been seen webbing upon the cotton. It is not unusual for them to be seen at this season of the year; and if they were universally hunted and destroyed at their first appearance, we might very soon get them down, but that concert of purpose and of action cannot be had among cotton planters. Farmers will probably be among the last to obtain the benefits of combined purpose and action. The worms, coming early, sometimes eat the cotton leaves and disappear, and the cotton "comes out" again

and makes a fair crop, as it did last year with us; but they may continue, reproduce, and destroy the plant entirely. Something has been said in print about introducing the English sparrow to destroy the worm, but, so far as I know, no effort has been made to get them. The expense will probably prevent a decisive experiment of their utility. May I suggest that the Department supply to some careful farmers of Georgia and Alabama a few of these birds for experiment? The beneficial services of birds in destroying the cotton worms have been noticed in several instances. A farmer in Lavaca county planted a part of his cotton field in common millet, which ripened at the time the worms appeared in force and attracted the birds, who ate up the worms also, and preserved the cotton an acre deep where it and the millet joined. A like result was had in Grimes county, the adjoining cotton being kept clear of the worms by the birds. The plan most effective would be to plant millet in the cotton throughout the field. Other benefits would result from the sowing of the millet, it being the best forage known to us, and from leaving convenient passways over the field, in cotton gathering time, after the millet has been cut and saved. The local supply of birds would be wholly inadequate to the demand of half a dozen joining cotton farms. It has been suggested here, too, that to multiply birds (by protecting them) to an extent commensurate with the demand for cotton protection would render them too numerous and destructive. South Carolina and rice growing countries are troubled with rice birds very much some seasons, yet rice is abundantly produced, and there are ready means to be used when birds are in a great excess.

THE POTATO BUG.

Whiteside County, Ill.—The Colorado potato bugs have appeared in force.

Putnam County, Ill.—Potato bugs have made their appearance.

Boone County, Ill.—The bugs have attacked the potato vines. Acreage less than last year.

Madison County, Ind.—Potato bugs are very destructive.

Wells County, Ind.—The Colorado potato bug has made its appearance by millions.

Van Wert County, Ohio.—The potato bug has made its appearance in considerable numbers.

Mercer County, Ohio.—The potato bug is making sad havoc with the potato vines.

Jefferson County, Ind.—We have a new potato bug. I think it must be the "Colorado" bug. When full grown it is half an inch long and somewhat broad, striped, and multiplies freely. I have succeeded best in disposing of them by shaking them off into a pan and destroying them. I tried lime on the potato vines with some success.

Monroe County, Mich.—Two kinds of potato bugs, called here the Colorado and the California, are making considerable ravages upon the crop. The Colorado bug is of a reddish color, resembling, at a little distance, a lady bug, but is without wings, and sluggish in habits. The California is a large, striped bug, nearly an inch long, with wings. They are very active, and great eaters. The former are the most numerous.

Green Lake, Wis.—I have been using the following remedy for the potato bug, which has become a serious nuisance and destroys the crop when it is not destroyed. One part of Paris green and forty parts of flour mixed and sprinkled on the vines when the dew is on, or the vines

are wet. It does the work effectually. Of course the remedy must be repeated as occasion requires.

THE HEEL FLY.

Burleson County, Texas.—Some time since I received a letter from you, requesting a specimen of the heel fly, so troublesome to Texas cattle, and what I know of its habits. The request came too late for me to furnish the specimen this year, as they disappear early in April. I will comply next spring. The fly is similar in appearance to what is known as the nit fly, so troublesome to horses in the fall. It is somewhat larger, however, and of a lighter color, and makes scarcely a perceptible buzz when flying. It attaches itself to the flank, leg, or belly of cattle when depositing its eggs, fifteen or twenty of which are firmly attached to a hair in a straight line. During their season, it is almost impossible to plow with oxen during the middle of the day.

Out cattle, on being attacked, raise their tails perpendicularly and run to a thicket, water-hole, or canebrake, where they remain nearly the whole day. When so tormented, cattle will often bound off bluffs or run into bog-holes and swamps. As the cattle are never fed, and always poor in the spring, these pests cause an annual loss of many hundreds every year in this county.

I know nothing of the larvæ state or transformations of this fly, nor are any remedies used that I know of. It is found from the Brazos to the Rio Grande. I have never heard of its being in any other State. It first appears with the rising grass, in February or March, and disappears in April.

HOG CHOLERA.

Boyle County, Ky.—Hog cholera is becoming quite prevalent. All remedies fail. Several farmers have lost their entire stock. I have lost 50 per cent.; of those attacked only three recovered. No known cause for the disease. Generally farmers lose about one-third of their stock. The disease having expended its virulence runs out in the pigs.

JERSEY STOCK IN IOWA.

Clinton County, Iowa.—I have been introducing the Jersey stock into this place. Bought a bull and two heifer calves three years since. The heifers came in last April and May at two years old; they were as large as the common stock here. Kept them the same as my other stock, and find them hardy and more easily kept than the common stock. In less than ten months they have made 400 pounds of butter, that brought me \$125; sold one of the calves at nine months old for \$100, and have another that I can sell for \$120, (both of the calves were bulls—heifers would be worth more;) took \$100 in premiums at the county fair, one of which took the first premium as the best dairy cow on exhibition. One of them made nine pounds and thirteen ounces of butter, and the other eight pounds and fourteen ounces in one week in June; fed entirely on grass. One of them had a second calf just eleven months after the birth of the first.

DISEASE AMONG CATTLE.

Owsley County, Ky.—Several head of cattle died in the month of May of what is called dry murrain. The best farmers think these cattle

died from eating white-oak leaves before the fuzz comes off, which dries cattle up and they die very soon afterwards. They quit eating.

DOGS VERSUS SHEEP.

Campbell County, Tenn.—I have recently purchased some land in Eastern Tennessee, with the intention of going largely into sheep, breeding, if the prospects should prove encouraging. But I am afraid there will be a great drawback to an enterprise of this kind from the want of some legislation with reference to dogs. I hope it may be possible to call attention to this want, by submitting to members of Congress some account of the great depredations committed by these animals, thus inducing some national or State legislation for the relief of sheep-breeders.

BRITISH IMPORTATIONS OF 1870.

WHEAT.

The importations of wheat and flour into Great Britain, for five months of the present year, are larger than the receipts of five months of last year. The increase amounts to 1,447,108 hundred-weight of wheat, and 432,087 barrels of flour, equivalent to nearly five millions of bushels of wheat. The amount supplied by the United States was 5,264,745 hundred-weight of wheat, and 920,934 barrels of flour, together equivalent to 14,432,194 bushels of wheat, against 7,387,717 bushels for the like period of last year, an increase of 7,044,477 bushels. This increase is more than two millions greater than the total increase from all countries, showing a falling off elsewhere to that extent. The official figures are given in detail as follows:

| Where from. | Quantities imported. | |
|---|----------------------|-------------|
| | 1869. | 1870. |
| WHEAT. | | |
| | <i>Cwt.</i> | <i>Cwt.</i> |
| Russia | 3,015,148 | 4,269,872 |
| Denmark | 160,318 | 197,101 |
| Prussia | 1,734,041 | 984,241 |
| Schleswig-Holstein and Lauenburg | 21,909 | 6,011 |
| Mecklenburg | 276,860 | 304,634 |
| Hanse Towns | 293,881 | 137,312 |
| France | 117,726 | 15,987 |
| Illyria, Croatia, and Dalmatia | 390,170 | 42,327 |
| Turkey and Wallachia and Moldavia | 604,822 | 161,162 |
| Egypt | 329,343 | 95,550 |
| United States | 3,131,597 | 5,264,745 |
| Chili | 165,074 | 73,584 |
| British North America | 43,061 | 194,070 |
| Other countries | 164,767 | 132,229 |
| Total | 10,451,717 | 11,898,825 |
| WHEAT-MEAL AND FLOUR. | | |
| Hanse Towns | 243,892 | 378,733 |
| France | 649,692 | 500,072 |
| United States | 308,414 | 920,934 |
| British North America | 18,423 | 24,556 |
| Other countries | 437,662 | 265,805 |
| Total | 1,658,013 | 2,090,100 |

COTTON.

The importations into Great Britain for five months ending May 31, 1870, are 4,999,414 hundred-weight, of which the United States furnished 3,340,952 hundred-weight. For a similar period of 1869 they were 3,990,762 hundred-weight, of which 2,210,011 hundred-weight were from this country. The total increase is 1,008,652 hundred-weight; the increase from this country 1,130,941 hundred-weight. This makes a decrease from other countries of 122,289 hundred-weight.

ENGLISH CROPS.

The following, relative to the crops of England, is an extract from a letter dated June 20, written by Geo. J. Abbott, esq., United States consul at Sheffield, England:

A severe drought has prevailed throughout England, and more especially in the northern counties, for three months past. This drought has also extended to France, as you will see by the printed slips annexed to this letter.

The hay crop will be a very small one in this part of England. They are already commencing mowing, but the crop is light and hay has already advanced, and is advancing, in price. The cattle have been turned out in many grass fields before mowing, the pastures no longer affording them food.

The wheat crop, I think, has also been much injured by the drought, and wheat has advanced in price.

The probability is that there will be a great demand both for wheat and hay from the United States. Two years ago, in 1868, when a severe drought parched the fields and injured the hay crop, there was commencing a large importation of hay from the United States, but when the newspapers reported that the foot and mouth disease* had broken out among the cattle from Texas an order in council was issued, imposing so many restrictions upon the importation of hay that it broke up the trade.

I suggested to Mr. Johnson, who then represented the United States in London, to represent to Lord Stanley, who was then at the head of the Foreign Office, that the hay which was at that time coming to England from the United States was imported almost entirely from the New England States and New York, and that the cattle affected with the disease, which was alleged to be prevailing, were more than a thousand miles away from the hay fields of those States, and that not one of them had ever set foot within them, so that there was no danger whatever of the introduction of the disease into Great Britain through the hay which was then imported. The order in council was subsequently modified, but not until considerable time had elapsed.

BONE FERTILIZERS.

The Department, having been applied to of late by many of its correspondents to issue some general instructions by which farmers might manufacture their own manures, has prepared the following, accompanied by such remarks as would make the manipulation intelligible.

Bones are almost completely insoluble in water—practically so. When very finely divided, as in fine bone dust, a small amount is dissolved by the water of the soil containing carbonic acid, but the quantity is small, and the time taken to do it is great. For the useful effects of bones, therefore, the farmer must dissolve them, and sulphuric acid is alone the most powerful and economical means for that end. It depends on the different form of bone which the farmer operates on as to how much acid will be required. The sulphuric acid used should be of considerable strength, and the farmer should ask for it of the specific gravity of 1.70 or marking 140° Twaddell. When the acid reaches the bones, the mass effervesces, boils up, and becomes warm, the sulphuric acid taking away

* Texas cattle disease is meant.—[ED. REP.]

two-thirds of the lime of the bone from the phosphoric acid, which remains united with the other third, forming a superphosphate, bi-phosphate or mono-calcic phosphate, which substance is perfectly soluble in water, and is called soluble phosphate. The sulphuric acid uniting with the lime forms a sulphate of lime, (gypsum, or plaster.) So that in every heap in which a superphosphate has been made there is always an amount of sulphate of lime (plaster) formed, and the plaster forms the greater portion of the whole mass.

The bones which are used for making superphosphates by manufacturers, or which may be had by farmers, are found in the following conditions: 1. Bone dust or ground bone. 2. Boiled or steamed bones. 3. Bone ash of sugar refineries.

1. *Bone dust*.—Before the bones are crushed they are now generally boiled for the sake of the fat, which is sold to the soap boiler. It is of no value as a manurial agent, but is rather deleterious, coating the bone and protecting it from the action of the acid, and it would be advisable for the farmer when possible to boil the bones.

2. *Boiled or steamed bones*.—Bones are steamed for the purpose of removing gelatine or animal matter of the bone for the purpose of converting it into glue. The effect of steaming on bone is therefore to deprive it of some of its organic matter, but it must not be supposed that the whole of the organic matter is removed; a considerable quantity remains, and some ammonia can always be found in such bones when decomposing. A reference to the analysis shows that not more than five or six per cent. of organic matter has been extracted from the bone.

3. *Bone ash*.—If bones are burned in contact with the air, the greater part of the carbon is driven off with the other combustible parts of the bone. To avoid this result, which would render the ash worthless for the use of the sugar refiner, the bones are charred in heated iron cylinders, out of contact with the air, by which only a portion of the animal matter is burned off. A large amount of finely-divided charcoal remains, mixed with the bone earth, giving the valuable properties to the bone ash. It has become a great deodorizer and antiseptic, and capable of condensing gases within its pores, by which means it retains both the ammonia and nitrogen of the soil and the manure. The black color of the bone ash is due to this charcoal.

| | (Voelcker.) | | (Anderson.) |
|--|-------------|---------------|-------------|
| | Bone dust. | Steamed bone. | Bone ash. |
| Moisture | 12.06 | 8.06 | 6.10 |
| Organic matter* | 31.12 | 25.45 | 5.05 |
| Phosphates of lime and magnesia, (bone earth) | 49.54 | 60.48 | 79.20 |
| Carbonate of lime | 4.99 | 3.25 | 4.05 |
| Magnesia and alkaline salts, (chiefly common salt) | 1.91 | .43 | 1.15 |
| Sand | .38 | 2.33 | 5.45 |
| Total | 100.00 | 100.00 | 100.00 |
| * Containing nitrogen | 3.69 | 1.84 | ..... |
| Equal to ammonia | 4.49 | 2.24 | ..... |

One hundred pounds of bones, ground, crushed, or dust, (not burned,) require forty pounds of sulphuric acid, (vitriol.) This quantity, if acting solely on the bone phosphate, would remove two-thirds of its lime; but, as there is always some carbonate of lime present, this is first acted on

by the acid, and thus some of the phosphate escapes decomposition, and remains in the mass as insoluble phosphate; hence in the mass there are always three constituents, the amount of which it is desirable the farmer should know, viz: the soluble phosphate, (mono-calcic phosphate,) the insoluble phosphate of lime, (undissolved bone earth,) and the sulphate of lime. These are the three important substances in a superphosphate, for although ammonia may be potentially present if raw bones have been used, yet a superphosphate is not made or used for the sake of the ammonia; and when bone ash or burnt bone is used no ammonia is required.

If calcined bones, or the bone ash of the sugar-house, be the material used, every 100 pounds will require $87\frac{1}{2}$ pounds of vitriol; when these have fully acted on each other the mass would give: superphosphate of lime, 26 pounds; gypsum, 66 pounds; sulphate of magnesia, $1\frac{1}{2}$ pounds; soda, $2\frac{3}{4}$ pounds, and the balance of the $187\frac{1}{2}$ pounds would be water and undissolved bone earth. If the farmer uses steamed bones, a quantity of vitriol intermediate between the two proportions named will be needed, say 66 pounds.

The usual mode of making the fertilizer is to select a good wooden floor of a barn, well covered overhead, or to make a box floor of thick plank, laid tight. On this first throw the bones. If not in dust, it would be well to sift the bones, and place the coarser part on this floor, putting the finer portion aside for mixing in afterwards. By this means the rough bone will come in contact with the strong acid first and be more effectually divided, while the finer parts can then be added to dry up.

No metal (except lead) should be used on the floor, or where the acid can reach. Water equal to one-fourth or one-sixth the weight of bone is then to be poured on the bone, well stirred in with a spade, and left for two or three days to heat and ferment; it would be well to use the water boiling. Then add the sulphuric acid, mixing well with a wooden spade or board; the mass effervesces, or boils; stir twice a day well for two days, so as to turn the whole mass over; let it stand for two or three days to dry; add the fine bone and mix well. If not dry, use some absorbing substance, as sawdust, dry peat, or dry earth, in small quantities, and mix well. *Do not use for this purpose lime, ashes, or marl,* as they would destroy the superphosphate and spoil the whole work. Made in this way from bone ash, this fertilizer will yield 30 per cent. of soluble salts, of which 26 per cent. is superphosphate of lime. The manufacturer will say that there is 35 to 37 per cent. of superphosphate present, but he always over-estimates; indeed, 26 per cent. of soluble superphosphates is *more* than any farmer wants; it is too soluble, and will pass out of his ground too soon, especially in wet weather; 12 to 15 per cent. is a better proportion for the farmer, for then he has a proportionally larger amount of insoluble bone phosphate in store for future use in the soil. On this account it is better for the farmer to use raw or steamed bones than bone ash; he has a sufficient, though a smaller, quantity of superphosphate present.

This fertilizer will not suffer from exposure to air, but it must be protected from rain or wet; it ought to be barreled up when not used immediately. This fertilizer, made as directed, will be of a whitish color if made from raw or steamed bone, and gray black if made from bone-black of the refinery; but the color of a superphosphate is of no consequence, and no test of its quality; neither is its smell; it ought to have no smell, or a faint acid odor, if any. One ton of a manure made by the farmer as directed is worth two purchased in the market.

A good manure may be made from bones without forming a superphosphate, by dissolving the animal matter of the bone by means of alkaline leys, and thus freeing the bone earth, which is then in excessively fine particles fit to be dissolved in the waters in the soil. Many recipes have been given for this. Dr. Nichols, in his *Boston Journal of Chemistry*, (February, 1869,) gives the following, which he recommends: Take a barrel of fine-ground bone and a barrel of good wood ashes; mix well together and add three pailfuls of water; mix the whole intimately, stirring daily; the mass will be fit for use in a week. This is a good manure for corn, a gill being used to the hill. In this fertilizer there is, as stated, no superphosphate found; the bone earth is merely separated from the hard gelatine or animal matter, which is dissolved by the potash of the wood ashes; this organic matter is in a soluble state, the bone earth is finely divided, and there are present the potash and other mineral salts of the wood ash, all of which make a most valuable fertilizer.

The South Carolina phosphates may be treated in a manner similar to bone ash of the refinery, with vitriol, but will not make so valuable a manure, because the amount of phosphate of lime present is not nearly so great as in bone ash; it rarely exceeds the quantity in bone dust, and has 10 to 20 per cent. useless matter present. Carolina phosphates at \$39 a ton will not make a richer fertilizer than raw bone at \$45 a ton.

T. A.

THE ALVARADO BEET SUGAR FACTORY.

A company was organized some time ago in California for the purpose of manufacturing sugar from beets, it having been demonstrated that the climate of the State is well adapted to the development of saccharine matter in the beet. With a capital of \$250,000 the company began its operations at Alvarado, a town about twenty miles south of San Francisco. The factory is already in a forward state of construction, and the requisite machinery, of elaborate and finished character, is being made in San Francisco. The building is large and commodious, requiring for its construction 78,000 feet of lumber. The following machinery and apparatus will be used in the factory: Four tubular boilers, each 54 inches in diameter and 16 feet long, with steam and mud drums, all complete, and embracing everything in the way of the latest improvements; two engines, 14 by 30, of first-class finish; one small engine, 16 by 12; one vacuum pan and two air pumps, four saturation pans, five filters, two filter pumps, one beet grater, one beet breaking machine, one beet washing machine, three mortars, (tanks in which sugar and sirup are elevated from one floor to another,) also, a number of large sheet-iron tanks for various purposes about the works. In addition to these is a multitude of shafting, pulleys, pipes, pumps, and various fittings incidental to a complete sugar manufacturing and refining establishment, capable of working up fifty tons of beets per day.

The factory will be ready to go into operation about the first of September next, or as soon as the beet crop comes in. It is the intention of the company to depend chiefly for their stock of beets upon the neighboring farmers, who will receive a fair price per ton for them, delivered at the factory.

The operations of the work will be under the immediate supervision of gentlemen of experience, who were, indeed, for a long time engaged in

some of the most extensive beet sugar factories of Germany. The factory will give employment to from 100 to 150 men.

The Scientific Press, (San Francisco,) of June 18, says:

The manufacture of sugar from beets ought to form one of our most available and profitable branches of industry. The waste products or pulp, after the saccharine matter has been extracted, afford excellent food for cattle and hogs, and will be found especially serviceable for use by the dairy establishments from which this city is supplied with milk.

PRIZES FOR ESSAYS ON AGRICULTURE.

The State Agricultural Society of Georgia, in the list of premiums for the State Fair of 1870, offers the following prizes for essays, competition to be open to all:

1. For the best essay on the culture of cotton, \$100.
2. For the best essay on the culture of corn, \$100.
3. For the best essay on the culture of wheat, \$100.
4. For the best essay on the culture of grasses and forage plants, \$100.
5. For the best essay on the value of cotton seed as plant and animal food, with description and estimate of machinery necessary for its preparation, \$100.
6. For the best essay on the improvement of land by the turning in of green crops, in comparison with other modes of improvement, \$100.
7. The best essay on the practicability and profitableness of manufacturing the cotton crop of the South within our own limits, \$100.
8. For the best essay on wool growing at the South, \$50.
9. For the best essay on the profitableness of raising thorough-bred stock, \$50.
10. For the best essay on draining, \$100.
11. For the best essay on irrigation, \$100.
12. For the report of the most valuable farm, \$100. (This report must give full statement of its management; the value of the land per acre; the number of acres in cultivation; the value of every animal used in cultivation; the whole expenditure of money for the year; quantity of each farm product raised; amount of money received; full details in every respect; whole net profits. In determining the question of the most profitable farm, the costs of improvements in buildings and the value of woodlands are not to be considered as part of the investment in the farming operation, but only the value of the cultivated land.)
13. For the best essay setting forth the best commercial fertilizer, the facts and reasoning to be sustained by an experiment made by the writer, which experiment shall show the amount of fertilizer used, the ingredients of the fertilizer, and what proportions, combined with cost and product, and show what fertilizer, with its combinations, is best adapted to corn, what to cotton, to wheat, or to other crops. \$25.

SALES OF KENTUCKY STOCK.

The following sales of stock were made by Kentucky breeders at their annual public sales during the last week in June:

At Mr. Alexander's sale, 6 thorough-bred mares brought an aggregate of \$1,365, or an average for each animal of \$227 50; 18 thorough-bred

colts, foaled 1869, \$8,485, average, \$471 38; 24 thorough-bred fillies, foaled 1869, \$9,500, average, \$391; 13 head of trotting stock, \$4,145, average, \$317 31; 27 Alderney cattle, \$4,125, average, \$152 77; total proceeds of sale of 88 animals, \$27,620, an average of \$313 86.

At F. P. Kinkead's sale, 14 horses brought \$2,120, at an average of \$151 42; 5 bulls, \$918, average, \$183 60; 12 cows, \$4,360, average, \$363 33; 3 Alderneys, \$655, average, \$218 33; 31 head of sheep, &c., \$532, average, \$17 16; 7 hogs, \$311, average, \$44 28; for the lot, 72 head, \$8,895, an average of \$123 54.

At the sale of Jesse H. Talbutt, 28 cows brought \$6,215, an average of \$221 96 each; 8 bulls, \$1,955, average, \$244 37; for the 36 animals, \$8,170, an average of \$227 50.

At B. B. Groom's sale, 73 cows aggregated \$18,230, an average of \$249 73; 18 bulls, \$3,335, average, \$185 28; 10 head mixed, \$830, average, \$83; total for 101 head, \$22,395, average, \$221 73.

At Lewis Hampton's sale, 34 cows and calves brought \$11,010, an average of \$323 82; 9 bulls, \$2,295, average, \$255; 3 cows, miscellaneous, \$675, average, \$225; total for 46 animals, \$13,980, an average of \$303 91.

At Mr. Kinkead's sale, the highest figures for single animals was as follows: Sorrel gelding, \$280; a bull, \$365; a cow, \$1,000; Essex hog, \$75. At Mr. Talbutt's sale, a roan bull, calved in 1867, sold for \$620, and a roan cow, calved in 1862, \$580. At Mr. Groom's sale, a cow calved in 1866 was sold for \$1,120, and a bull calved in May, 1864, \$1,015. At Mr. Hampton's sale, the highest priced cow was \$505; highest priced bull, calved in 1869, \$500.

UNION STOCK YARDS, CHICAGO, ILLINOIS.

The following exhibit of receipts and shipments of live stock at the Union Stock Yards, Chicago, Illinois, for the six months ended June 30, 1870, is furnished by George T. Williams, assistant secretary:

| | Cattle. | Hogs. | Sheep. | Horses. |
|---|----------|----------|----------|---------|
| RECEIPTS. | | | | |
| Chicago, Rock Island and Pacific railroad..... | 37, 839 | 118, 766 | 12, 484 | 33 |
| Illinois Central railroad..... | 42, 305 | 158, 538 | 46, 600 | 153 |
| Chicago, Burlington and Quincy railroad..... | 60, 321 | 212, 351 | 31, 396 | 548 |
| Chicago and Northwestern railway..... | 48, 961 | 129, 421 | 30, 762 | 858 |
| Chicago and Alton railroad..... | 36, 931 | 76, 101 | 20, 704 | 208 |
| Pittsburg, Fort Wayne and Chicago railroad..... | 112 | 494 | 100 | 8 |
| Michigan Central railroad..... | 338 | 1, 844 | 510 | 66 |
| Michigan Southern railroad..... | 458 | 2, 247 | 4, 646 | 84 |
| Pittsburg, Cincinnati and St. Louis railroad..... | 594 | 2, 424 | 1, 232 | ..... |
| Driven into yards..... | 1, 089 | 456 | ..... | ..... |
| Total..... | 228, 888 | 702, 642 | 148, 434 | 1, 958 |
| SHIPMENTS. | | | | |
| Pittsburg, Fort Wayne and Chicago railroad..... | 60, 279 | 144, 437 | 1, 879 | 294 |
| Michigan Central railroad..... | 51, 501 | 68, 795 | 43, 833 | 244 |
| Michigan Southern railroad..... | 68, 984 | 203, 669 | 2, 329 | 539 |
| Pittsburg, Cincinnati and St. Louis railroad..... | 2, 588 | 1, 107 | ..... | 73 |
| Chicago, Rock Island and Pacific railroad..... | 1, 644 | 154 | 225 | 399 |
| Illinois Central railroad..... | 3, 695 | 123 | ..... | 15 |
| Chicago, Burlington and Quincy railroad..... | 691 | ..... | 196 | 23 |
| Chicago and Northwestern railway..... | 643 | 1, 077 | 350 | 432 |
| Chicago and Alton railroad..... | 4, 729 | ..... | 75 | 95 |
| Total..... | 186, 324 | 418, 762 | 48, 847 | 2, 105 |

THE CROPS IN GERMANY.

W. Prentiss Webster, United States consul general at Frankfort, writes to the Department under date of June 20, as follows, in reference to the crops in Germany:

The season has now far enough advanced not only to indicate, but to sadly demonstrate, that the grain crop will not probably exceed one-third, and cannot equal one-half of its average amount. There has been no rain in any of the German States for the last four or five months. The lands are dry and parched. The crops are hardening, and will scarcely mature at all. The hay crop will be useless, and not worth cutting. The prices of all kinds of breadstuffs are daily and almost hourly rising.

At Mentz, the principal grain market of western and southern Germany, the dealers hardly know at what price to sell. They describe the prospect as discouraging in the extreme, and expect a great rise in prices. Every day adds to the gloom and despondency of this community, who begin to believe that great suffering awaits the poor and laboring classes. In some parts of Prussia, farmers are beginning to sell their cattle on account of the already-pressing costs and prices of keeping, so that poor beef is very cheap at the present time, and good fat beef is not to be found. I believe that the prospects are worse for Germany than for France or England.

In Hungary and Bohemia, and other parts of Austria, and perhaps all eastern Europe, they had much rain early in the season, and the crops there are said to be looking well, and to promise about an average yield. These countries, however, can do but little toward supplying others. There are but few railroads, and the transportation from remote parts of the country must be too difficult and expensive.

At the Bourse the prices of all Austrian railroads have advanced greatly on account of the prospective receipts from the transportation of grain during the coming season.

Of course there must be great exportations from America, and much larger than at any previous period. Indeed, the question will not be how much can be sold in Europe, but how much can the United States supply.

I think that it is generally believed that no change of weather or any possible contingency of events can materially alter the prospects of European harvests. The stock on hand of breadstuffs is not large, and we must soon look abroad for supplies.

ST. DOMINGO.

Mr. F. Schumacker, in transmitting a package of textile and other plants of St. Domingo to this Department, writes as follows:

I had the pleasure, by the mail a month since, of advising you of my intention to forward by this steamer the lace bark tree. It is at Neyba, west coast of the Bay of Ocoa. President Baez sent for it, but it is so little known no one could be found to select it. The President's brother, the governor of Azua, is now here, but will return in a few days, and will obtain a specimen; also, the "Palo del Cruz." Mr. Baez himself knows the lace bark well, and has frequently seen it at Neyba. I hope to furnish it by the steamship Tybee, of July. Mr. Baez has kindly furnished me, for your Department, the "guarantey," a textile, in which I feel a great interest. You have some of these plants in the package; also, specimens of the bark, to which I call your special attention. The plant is abundant, (propagated by layers or cuttings,) of great strength, and, I imagine, is well adapted to linen fabrics. The leaf is so tenacious it can scarcely be ruptured, and would pulp admirably for paper stock. The plants I send have been out of the ground now two weeks, and have lost the leaves, which I regret. They were sent to the President from the Bay of Ocoa. This island could furnish the world with textiles.

I have sent an agent to the States to get a machine to strip the cabaya and prepare it for market, if such can be found. The maji and other plants also furnish textile material, but the cabaya and the guarantey are at the head of the list. In dye and cabinet woods no country is richer.

You have no conception of the resources of this favored land. Under Spanish rule it has exported one hundred millions annually. Under American enterprise this might be increased ten-fold. Coffee, cocoa, tobacco, cotton, sugar, fruit, dye and cabinet woods, annatto, tumeric, and indigo, (of which it supplied Europe at one period with more than half its consumption,) are here in the greatest abundance, and without season. Four crops of corn are produced annually. Almost every vegetable has a marketable value as a medicinal plant, or otherwise. Nearly every stream flows over sands of gold, and every hillock contains metallic wealth and magnetic irons. Cinnabar, cop-

per, gold, silver, and nickel abound. Salt exists in mountains, in semi-transparent crystals.

We have not a plow, steam-engine, or wagon-road on the island, or a saw-mill, and yet, such is the natural resources, over \$800,000 was paid last year for transportation alone, from Santiago to Puerto Plata, about fifty miles.

The following is a list of the plants received:

Aguacata, 3.—Vegetable fruit: a delicate salad vegetable: called here avocata, or alligator pear.

Mamey, 1.—Fruit.

Maji, 7.—The indispensable hedge-plant of the island; very large and impenetrable; a textile.

Indigo, 7.—Common in all open lands.

Arneira, 1.—Flower; bright pink, in large clusters.

Guarantey.—Textile.

Mariposa.—Parasite on the sour orange, or lime.

Franbottan, 6.—A gorgeous scarlet flower tree.

CULTURE OF MADDER IN SMYRNA.

E. J. Smith, United States consul at Smyrna, gives the following account of the culture of the madder root (*Rubia tinctoria*) in that region:

The ground usually selected is a flat or level plain, composed of a red and damp soil, but well drained. The color of the soil is said to affect the color of the root, giving it a deeper red tinge, which is the quality most highly prized. When grown on hill-sides or on high hard ground it is of a lighter color, and is less esteemed than the former. As a rule a dark soil is always chosen when it can be procured.

Plowing begins in May, and is repeated at intervals of a fortnight till October, to render the earth as friable as possible. As the rains generally set in about this time, the ground is allowed to rest until it is plowed previous to sowing, which takes place in February and March. Between October and February, however, the ground may be re-plowed whenever it is practicable. The seed is sown broadcast, and the ground manured and left undisturbed. About 300 pounds of seed are sown on an acre. As soon as the plant has grown some inches the ground is hoed and weeded. This operation is repeated as often as possible. Six months after sowing, drills are made of the width of about one foot, at intervals of three feet, the earth from these drills being thrown over the plants so as to completely bury them. This is repeated every year, or as often as is thought requisite, in order to force the strength of the plant downward and produce roots instead of stems and leaves. Some of the roots thus treated attain the depth of six feet. This process is performed only on the plains; on hill-sides it would be useless, as the rains would wash away the earth too frequently. The plant is allowed to remain in the earth from three to seven years; but the usual time is five or six. As a general rule the longer it remains in the soil, up to the seventh year, the thicker and better the roots will become. In certain locations, however, where great dampness prevails, it cannot be allowed to continue more than three years, as a certain grass springs up which completely chokes it, causing destruction of the crop.

When the roots are to be taken up, the stems are cut down and the seed collected. Drills are then dug to the required depth, and the roots on either side laid bare, which renders the extraction of the whole easy and complete. The roots are laid in bundles, and then carried to a reserved piece of ground well beaten and perfectly dry, having been previously prepared for their reception. On this the madder is spread out to dry through the powerful action of the sun's rays. Although an easy process, this is a most important one, and should be performed thoroughly; as, if the madder is packed damp, mould will ensue and deteriorate the quality. For this reason principally the summer season is always selected for this purpose. In winter it has to be dried in ovens, but the quality becomes inferior, and it seldom dries well. The roots are packed as closely as possible in hair bales containing 420 pounds, and then sent to town. Here the bales are opened and the roots subjected to steam pressure, which reduces their bulk one-half. They are then enveloped in canvas, and bound with iron hoops ready for shipment.

The average cost to the agriculturist of a quintal of madder of one hundred and twenty-five pounds, including all expenses till the time of packing in the interior, as also the tenth paid as a tithe to the government, is 140 piasters or \$5 25, not including

ground rent. The charge for bringing to town by camel, and by rail combined, or by camels alone, is from 15 to 25 piasters, or nearly 60 cents to one dollar, and depends mostly on the season and the condition of the camels. Two years ago charges were more than doubled, owing to a fearful epidemic which raged among these animals, and destroyed great numbers. Day laborers, for hoeing, weeding, and carrying, receive 15 to 20 cents per day. Last year as high as 40 cents were paid, but this was an exceptional case and due to fever, which disabled many of the workmen. The work of collecting or extracting the roots is paid for on a different principle, the most skillful workmen receiving the highest remuneration. The pay is 20 cents every one thousand drams, or seven pounds. Madder seed now costs in the interior 20 to 24 cents per oke of three pounds, but some time ago it could be obtained for eight, or even four cents per oke.

The best quality is called Bakir, from a village of Kirkayatch, where it is produced. That grown in the districts of Magnesia, Axar, Kelembo, Yayakioi, Sulumauli, and Balukassar, goes by the same name, Bakir. About forty thousand bales of this quality are produced in a good season. This year they will produce but half this quantity. The second quality may amount to thirty thousand bales in the best season, and comes from Demirzi, Hayagiek, Yirdes, and Caramania. Only ten thousand bales are expected this year from these districts.

CINCHONA CULTIVATION IN INDIA.

C. B. Clarke, esq., officiating superintendent of the botanic gardens, and in charge of cinchona cultivation in Bengal, in his annual report to the secretary of the government of Bengal, makes some interesting statements relative to cinchona cultivation in India. Mr. Clarke thinks that cinchonas thrive best at about two thousand feet above the ocean, and grow very well down to the rivers at eight hundred feet elevation. *Cinchona calisaya* grows best at similar elevations, but will not grow so high as *C. succirubra*. The only plants in the Rungbee plantations which are above four thousand feet elevation are some *C. officinalis*, which are being tried at this higher level as a last experiment as to whether the species can be cultivated at all at Rungbee.

The manufacture of the crystallized sulphate of quinine now in general use, consists of two stages. The bark is treated with dilute acid, which takes up the alkaloids contained in it, and also a certain quantity of coloring matter, resin, and other rubbish, which quantity is considerable in *C. succirubra* bark, the only bark which for some years will be produced in quantity at Rungbee. The acid infusion is neutralized by an alkali, when the quinine alkaloids are precipitated, accompanied with more or less of the rubbish. These precipitated alkaloids (more or less impure) are known as the first stage of the manufacture. The second stage is, in actual manufacture, generally performed by washing out of these precipitated alkaloids (by strong alcohol) the quinine, and evaporating the alcohol.

According to Dr. Broughton's cinchona report of August, 1868, the quinine alkaloids are valuable febrifuges, and operate pretty much as quinine, but are less powerful. Roughly, it may be said that two grains of cinchonidine are equal in all respects to one grain of quinine. The action of cinchonine and the other minor quinine alkaloids is less satisfactorily made out, but in the *C. succirubra* bark usually 75 per cent. of the alkaloids present are either quinine or cinchonidine. If the precipitated alkaloids are dissolved in dilute sulphuric acid, the dose is equivalent to that of the crystallized sulphate diluted in acid. Several doctors of experience in the medical department of the government object that the crystallized sulphate is pure, and that they can be sure of the dose they give to a grain; whereas in the precipitated alk-

loids the proportions of cinchonidine, and even more inert alkaloids, will be variable and doubtful.

Cinchonidine is about one-third the value of quinine, and its crystals are exceedingly like those of quinine. There is very little quinine in general use at present that is not deeply adulterated with cinchonidine. Should the production of precipitated alkaloids be carried on upon a large scale, it would be possible to thoroughly mix a large quantity, analyze a sample, and then issue it with the percentage of quinine and cinchonidine certified on the labels of the bottles.

After protracted experiments, Mr. Clarke states it as his opinion that the successful manufacture of quinine is not a particular secret, or the adoption of any particular routine, but is the result of the application of skillful manipulation and minute experience at each step and turn of the work.

The prunings and thinnings of this season are estimated to produce about 1,500 pounds of bark, of which nearly 1,000 pounds will be bark from wood three or four years old, the remainder from second year bark.

In the bark, from very young shoots, the quantity of resin present is large, and it must be dealt with by boiling in alkaloid water, notwithstanding the sacrifice of a percentage of the small quantity of quinine present, consequent upon the operation.

In regard to working fresh bark Mr. Clarke says:

It has been stated that bark gives up its quinine more readily in a fresh state. I have tried the fresh bark and have not obtained a good result. I have little doubt that this failure was because my bark was not cut fine enough. Indeed, I could see that the dilute acid discolored the bark hardly one-fortieth of an inch deep. There will always be a great practical difficulty in working the fresh bark on a large scale. The fresh bark cannot safely be stored, as it soon ferments. Now the bark only "rises;" that is, is fit for stripping at certain times; so that in the factory, if we worked fresh, we should be compelled to provide a very large quantity of machinery indeed, so as to be able to take in hand, at once, the bark that would come in upon us irregularly in masses. By working it dry we can work it regularly at our leisure.

The number and distribution of cinchona plants in the government plantations at Darjeeling on the 1st of April, 1870, are stated as follows: Of all species, number in permanent plantations, 1,500,658; number of stock plants for propagation, 40,000; number of seedlings or rooted cuttings, in nursery beds for permanent plantations, 379,325; number of rooted plants in cutting beds, 340,127; number of cuttings made during the month, 2,000; total number of plants, cuttings, and seedlings, 2,262,110.

WHEAT CULTURE IN ENGLAND.

At a late meeting of the Kingscote Association, England, Mr. Burnett stated that a much larger quantity of wheat and barley per acre is now produced on the Cotswold hills than was grown thirty years ago. This, he said, does not result from the adoption of any new system of cultivation, but from improvement of the old—in the time of planting, the use of drills instead of broadcast sowing, in the use of improved implements for preparing the soil, and in the application of richer manure. Whether the present system of wheat cultivation can be so improved as to yield a greater remuneration without injury to the crops that follow is an important question. Steam cultivation is one of the great improvements of the day on heavy lands, but where we can plow an acre a day with a pair of horses the steam culture will not pay. In this neighborhood deep cultivation has been tried and has failed.

Top-dressing in the spring with artificial manures has been advocated by many. In 1862 he tried this system, and his experiments show the following results:

TOP-DRESSING WHEAT.

| Manure applied. | Produce of one year. | Wheat. | Value at 6s. per bushel. | Loss of manure. | Balance. |
|--------------------------------|----------------------|-------------|--------------------------|-----------------|----------------|
| | <i>Bushels.</i> | <i>Lbs.</i> | <i>£ s. d.</i> | <i>£ s. d.</i> | <i>£ s. d.</i> |
| Procter's wheat manure * | 38½ | 60 | 11 11 1 | 2 0 0 | 9 11 0 |
| Guano † | 36½ | 60 | 10 19 0 | 2 0 0 | 8 19 0 |
| Nitrate of soda ‡ | 37½ | 59½ | 11 5 0 | 2 0 0 | 9 16 0 |
| Soot | 38 | 60 | 11 8 0 | 1 12 0 | 9 16 0 |
| No manure § | 32 | 60½ | 9 12 0 | ..... | 9 12 0 |

* Produced a larger quantity of straw, but inferior sample.

† Similar quantity of straw and sample.

‡ Largest quantity of straw and poorest sample.

§ Smallest quantity, but much the best sample.

Some are of the opinion that top-dressing is advisable where there is a thin, weak plant. Mr. Burnett said that many proofs might be brought in support of this opinion, but he would only mention one, supplied by the late E. Drew; an application of four hundred-weight of Messrs. Procter's wheat manure per acre, at a cost of 32s. Calculating the wheat at 6s. per bushel, and the straw at 20s. per ton, left a loss of 4s. 8d. Guano, under precisely similar circumstances, gave a profit of £1 4s. 9d. Nitrate of soda gave a profit of £3 4s. 5d. The straw and grain from the wheat manure were of better quality than from either of the others.

POTASH AS A MANURE.

The large proportion of potash in the ash of plants suggests the probability of its value as a fertilizer. The following table gives, from the analysis of Professor Way, 1st, the ash per cent. in the dried plant; 2d, the potash; 3d, the chloride of potassium in the ash of various grasses:

NATURAL GRASSES.

| | 1. | 2. | 3. |
|------------------------------------|------|-------|-------|
| Meadow fox-tail grass..... | 1.55 | 37.03 | 9.50 |
| Sweet scented vernal grass..... | 1.24 | 32.03 | 7.03 |
| Downy oat grass..... | 2.01 | 31.21 | 4.05 |
| Soft brome..... | 1.36 | 30.09 | ..... |
| Crested dog's tail..... | 2.33 | 24.99 | 11.60 |
| Cock's foot..... | 1.59 | 29.52 | 17.86 |
| Hard fescue..... | 1.66 | 31.84 | 8.17 |
| Meadow soft..... | 1.93 | 34.83 | 3.91 |
| Perennial darnel or rye grass..... | 2.15 | 24.67 | 13.80 |
| Annual meadow..... | .59 | 41.86 | .47 |
| Smooth stalked meadow grass..... | 1.65 | 31.17 | 11.25 |
| Rough stalked meadow..... | 2.20 | 29.40 | 6.90 |
| Common cat's tail..... | 2.26 | 24.25 | .70 |
| Annual rye grass..... | 1.99 | 28.99 | ..... |

ARTIFICIAL GRASSES.

| | | | |
|------------------------|------|-------|-------|
| Common red clover..... | 1.85 | 36.45 | 2.39 |
| Purple trefoil..... | 1.58 | 22.12 | ..... |
| Cow grass..... | 1.77 | 34.72 | .85 |
| Common vetch..... | 1.11 | 32.82 | 3.27 |
| Alsike clover..... | 2.12 | 29.72 | 6.29 |
| Lucerne..... | 3.04 | 9.99 | 1.54 |

The ash of some plants contains a large percentage of potash. Liebig mentions a German cultivator who planted wormwood to obtain potash,

and thereby rendered his land incapable of bearing grain for years. It contains, according to Davy, 730 parts of that element in 10,000. In the same quantity of the ashes of fumitory were found 790 parts. Professor Way, in 100 parts of ashes, found potash in the following proportions:

| | |
|---------------------------------------|--------------|
| Of the potato..... | 50.88 parts. |
| Of the red clover hay..... | 14.85 parts. |
| Of the white clover hay..... | 14.33 parts. |
| Of the the long red mangold root..... | 21.63 parts. |
| Of the Skirving's Swede bulb..... | 36.16 parts. |

Professor Voeleker thus remarks upon experiments which seemed to prove the value of salts of potash upon potatoes, clover, beets, and turnips:

In several experiments, tried on poor, sandy soils during the past season, the addition of crude potash salts to superphosphate of lime had a very marked and decidedly beneficial effect on the potato crop, and also on Swedes. Even when applied alone, crude potash salts benefit materially root crops growing on poor, sandy land. The same beneficial effect I find, by direct experiments, cannot be obtained by the application of common salt, showing that soda is a much less valuable fertilizing constituent than potash, and incapable of replacing the functions of the latter in the vegetable economy.

Hitherto the price of potash has stood in the way of its being employed on an extended scale in agriculture. Even in its cheapest form—that of crude German potash salts—potash was too dear for practical application in agriculture. But as potash will, no doubt, be extensively used in agriculture, if it can be had at a cheap rate, I have pleasure in directing attention to a mineral called kainite, which is found in the neighborhood of Staufurth, in Saxony, and which, in round numbers, contains 24 per cent. of sulphate of potash and 12 per cent. of sulphate of magnesia. This saline mineral can now be obtained in England, in a finely ground condition, ready for mixing with other artificial manures, at about £3 3s. per ton, and probably less when considerable quantities are required. From three to four hundred-weight of ground kainite, mixed with an equal quantity of superphosphate of lime, per acre, has been found of great utility in the sugar-beet growing districts of North Germany; and I have no doubt will be found equally useful in England, where root crops are intended to be raised upon naturally poor or upon exhausted sandy soils. The crop, however, most likely to be greatly benefited by this potash manure is the potato.

On light soils, I would strongly recommend, as a manure for potatoes, the following mixture: four to five hundred-weight of kainite, (crude German potash,) four hundred-weight of Peruvian guano, and four hundred-weight of superphosphate of lime.

Professor C. W. Johnson thus sums up the results of experiments, instituted at the suggestion of Professor Voeleker, at Eserick Park, in the season of 1869, upon mangolds.

The mangolds were sown on May 11, 1869, on a barley stubble in 1868. The soil of the experimental field was of a light, sandy character, and, though naturally poor, it was in a good agricultural condition, as the produce from the unmanured plot showed.

The mangold crop was taken up, topped, tailed, and weighed on the 11th November, 1869, when the following results were obtained:

| Plots of 1-20th of an acre. | Manure per acre. | Produce per acre. | | |
|--------------------------------|--|----------------------|-------|------|
| | | Tons. | cwts. | lbs. |
| 1 | No manure..... | 22 | 10 | 0 |
| 2 | Mineral superphosphate, 3 cwts..... | 23 | 10 | 0 |
| 3 | Mineral superphosphate, 3 cwts., and potash salts, 2 cwts..... | 29 | 5 | 0 |
| 4 | Mineral superphosphate, 3 cwts., and Peruvian guano, 1 cwt..... | 26 | 0 | 0 |
| 5 | Peruvian guano, 3 cwts..... | 24 | 15 | 0 |
| 6 | No manure..... | 21 | 0 | 0 |
| 7 | Mineral superphosphate, 3 cwts.; potash salts, 2 cwts.; and sulphate of ammonia, 1 cwt..... | 30 | 5 | 0 |
| 8 | Rotten dung, 20 tons..... | 30 | 14 | 0 |
| 9 | Mineral superphosphate, 3 cwts.; potash salts, 2 cwts.; and nitrate of soda, 1 cwt..... | 31 | 15 | 0 |
| 10 | Rotten dung, 10 tons, and mineral superphosphate, 1½ cwt..... | 31 | 5 | 0 |
| 11 | Bone dust, 3 cwts., and mineral superphosphate, 1½ cwt..... | 27 | 15 | 0 |

The preceding tabulated results exhibit several points of interest, on which a few observations may be offered :

1. In the first place it will be seen that the two unmanured portions of the experimental field yielded a fair crop of mangolds. One of these plots produced $22\frac{1}{2}$ tons per acre, and the other 21 tons; or, on an average, the unmanured plots produced $21\frac{1}{2}$ tons of mangolds per acre. The difference in the weights of the crops on plot 1 and plot 6, is not greater than can be expected in field experiments. The experimental field thus was tolerably uniform in character and well adapted for the trial.

2. Mineral superphosphate alone gave only an increase of $1\frac{1}{2}$ ton, and thus appears not to be the kind of manure which ought to be employed for mangolds on light land.

3. The addition of two hundred-weight of salts of potash to three hundred-weight of mineral superphosphate proved very successful, inasmuch as it raised the produce to $29\frac{1}{4}$ tons, and gave an increase of $7\frac{1}{2}$ tons over the average yield of the unmanured portions of the field.

4. In these experiments, the addition of two hundred-weight of salts of potash had a better effect than the addition of superphosphate of one hundred-weight of Peruvian guano, or than three hundred-weight of Peruvian guano alone.

5. Peruvian guano alone answered better than mineral superphosphate applied by itself, but did not appear to be the best artificial manure that can be used on light lands for mangolds.

We may learn from this that neither the exclusive use of a purely mineral phosphatic manure, nor a manure containing, like Peruvian guano, an excess of nitrogenous compounds, produces the best crop of mangolds on light land.

6. A moderate amount of an ammoniacal salt, or of nitrate of soda, added to a manure composed of available phosphates and salts of potash, appeared to be very useful.

The mixture of three hundred-weight of superphosphate, two hundred-weight of salts of potash, and one hundred-weight of nitrate of soda, it will be seen, produced $31\frac{1}{4}$ tons of mangolds, which, considering the natural poverty of the soil, must be considered a very good crop indeed.

The same mixture, it will also be observed, had a better effect than 20 tons of farm-yard manure; for while plot 9 gave an increase of 10 tons over the unmanured plots, 20 tons of rotten dung per acre produced only an increase of $8\frac{1}{2}$ tons.

7. A heavy dressing of dung proved to be less beneficial than the addition of some superphosphate to a moderate dose of dung. The best crop, it will be noticed, was obtained by 10 tons of rotten dung and $1\frac{1}{2}$ hundred-weight of superphosphate.

On the whole, the results obtained at Eserick agree well with those described in the series of experiments which were tried by Mr. Ellis, at Iver Moor. Both sets plainly show that potash salts are very useful to mangolds, and that, in order to obtain the best economic results from their use for this crop, they should be mixed with superphosphate and a small quantity of either sulphate of ammonia or nitrate of soda.

I have repeatedly observed that a small quantity of nitrate of soda helps on the mangold plants in a striking manner, provided other fertilizers are used at the same time, or the land is in a high agricultural condition. The mixture of three hundred-weight of superphosphate, two hundred-weight of salts of potash, and one hundred-weight of nitrate of soda per acre, can be recommended both as an economical and beneficial artificial mangold manure for light land.

The result of these researches will lead to other and more extended experiments with salts of potash. They afford additional evidence of the importance of mixing together our artificial manures, and of avoiding the rapid conclusions at which we are apt to arrive from imperfect examinations. That we have, during the present century, made great advances in our knowledge of artificial fertilizers is an undoubted fact, but then we are well aware that many a vegetable mystery has to be unravelled, many a discovery yet made, before we can conclude that no further advances are to be made in rendering our soils more productive. We are, in all probability, ever treading on the verge of some discovery relating to the food of plants, a knowledge which our former experience tells we are often much nearer to than we are always willing to believe. We have an instance of this in some of the laborious trials of the celebrated Arthur Young. It was in the year 1782, that among many experimental dressings he used various salts of ammonia and of potash; several acids, such as the nitric, the muriatic, and the sulphuric; and also impure varieties of phosphate of lime—as in the dung of poultry, (*Annals of Agriculture*, vol. 1, p. 150, vol. 3, p. 122.) Had he but mixed some of these together he would have found that superphosphate of lime

which, after the lapse of more than half a century, Liebig first advocated the use of in 1840.

WAGES OF IRISH FARM LABOR.

The following table shows the average rates of wages of farm labor in twenty-eight counties in Ireland, as given by a recent statistical publication :

| Counties. | Per week, without food. | Per week, with food. | Per day, without food. | Per day, with food. |
|------------------|---------------------------------|----------------------|------------------------|---------------------|
| Cork..... | 7s. to 10s..... | 3s. to 6s..... | ..... | ..... |
| Limerick..... | 7s. to 10s..... | 3s. to 6s..... | ..... | ..... |
| Carlow..... | 7s. 6d..... | 4s..... | 1s. 4d..... | ..... |
| Kildare..... | 7s. 6d..... | 4s..... | 1s. 4d..... | ..... |
| Waterford..... | 7s. to 10s..... | 3s. to 6s..... | ..... | ..... |
| Kilkenny..... | 7s. 6d..... | 4s..... | 1s. 4d..... | ..... |
| Cavan..... | 6s. to 10s..... | ..... | 1s. to 2s..... | 3d. to 10d..... |
| King's..... | 6s. to 8s..... | ..... | 1s. to 1s. 6d..... | ..... |
| Meath..... | 7s. 6d..... | 4s..... | 1s. 4d..... | ..... |
| Queen's..... | 7s. 6d..... | 4s..... | 1s. to 1s. 6d..... | ..... |
| Wexford..... | 7s. 6d..... | 4s..... | 1s. 4d..... | ..... |
| Roscommon..... | 6s. to 8s..... | ..... | 1s. to 1s. 6d..... | ..... |
| Longford..... | 6s. to 8s..... | ..... | 1s. to 1s. 6d..... | ..... |
| Clare..... | 7s. to 8s..... | ..... | 1s. 6d. to 2s..... | ..... |
| Galway..... | 7s. to 8s..... | ..... | 1s. 6d. to 2s..... | ..... |
| Tipperary..... | 7s. 6d..... | 5s..... | ..... | ..... |
| Leitrim..... | 6s..... | ..... | 1s. to 2s..... | ..... |
| Kerry..... | 7s. to 8s..... | ..... | 1s. 6d. to 2s..... | ..... |
| Dublin..... | 6s. to 10s..... | ..... | 1s. to 2s..... | ..... |
| Fermanagh..... | 6s. to 10s..... | ..... | 1s. to 2s..... | ..... |
| West Meath..... | 6s. to 10s..... | ..... | 1s. to 2s..... | ..... |
| Monaghan..... | 6s. to 10s..... | ..... | 1s. to 2s..... | ..... |
| Sligo..... | 6s..... | ..... | 1s. 6d. to 2s..... | ..... |
| Mayo..... | 6s..... | ..... | 1s. 6d. to 2s..... | ..... |
| Armagh..... | £5 to £10 for the half year. | ..... | ..... | ..... |
| Down..... | | | | |
| Londonderry..... | | | | |
| Tyrone..... | | | | |

FACTS FROM VARIOUS SOURCES.

THE RECLAMATION OF SALT MARSHES.—Mr. S. N. Pike, who is engaged in reclaiming salt marshes in Hudson County, New Jersey, in a recent note to the Department, states that 4,000 acres are nearly drained and reclaimed. About 500 acres are now plowed, of which 200 acres are under cultivation this season. The experimental crops last year, consisting of tobacco, corn, oats, cabbage, potatoes, and several varieties of garden produce, proved entirely successful, and fully assured the opinion he had originally formed respecting the fertility and productivity of these lands. The plan which Mr. Pike has thus far carried out, includes the construction of substantial dikes or banks to protect the land from tidal overflow and percolation, a thorough system of drainage, to relieve the land in the first instance of the standing water, and subsequently of any excess of rain-fall, together with permanent self-acting sluices, which discharge at low tide. The first breaking up is accomplished with difficulty: yet, in one season, by natural action of the atmosphere, sun, rain, frost, and the equally potent influence of the plow, the whole body of the land will be changed to a rich permeable soil open to the highest cultivation.

Twitchell Island, California, recently reclaimed by the Tide Land Reclamation Company, has been sold to a company of practical Kentucky farmers, who intend cultivating and using the land for stock and dairy purposes. The sale was made at \$20 per acre.

IMPORTS OF GUANO.—During the quarter ended March 31, 1870, there was received at the ports named, guano from islands, rocks, or keys appertaining to the United States, and admitted free of duty, as follows:

| Received at— | Where from. | Tons. | Value. |
|------------------------------|---------------------------------|---------|-----------|
| Baltimore, Maryland..... | Navassa Island..... | 3, 453 | \$55, 250 |
| Wilmington, North Carolina.. | Navassa Island..... | 921 | 18, 020 |
| Philadelphia, Pennsylvania.. | Sombrero Island..... | 1, 425 | 17, 527 |
| Savannah, Georgia..... | McKean and Howland Islands..... | 5, 476 | 212, 790 |
| | | 11, 275 | 303, 587 |

For the nine months ended March 31, 1870, the receipts of guano from other than American islands, and subject to duty, amounted to 26,975 tons, against 7,365 for corresponding period of 1869.

MAINE LUMBER.—The amount of lumber, &c., the product of the State of Maine, upon the St. John and the St. Croix Rivers, and their tributaries, owned by American citizens, and sawed and hewn in the province of New Brunswick by American citizens, and admitted free of duty during the quarter ended March 31, 1870, is reported as follows:

| | M feet. | Value. |
|--|---------|-----------|
| Boards, clap-boards, deals, planks, joists, and scantling..... | 4, 005 | \$73, 007 |
| Laths, palings, pickets, curtain sticks, broom handles, bed staves.... | 1, 962 | 8, 360 |
| Shingles..... | 565 | 1, 028 |
| Other shooks and staves, and headings..... | | 1, 448 |
| All other lumber..... | | 82 |
| | 6, 532 | 83, 925 |

SILK CULTURE IN CALIFORNIA.—Albert Broussier, a sericulturist of Los Angeles, is feeding his worms with branches this season, thus saving the labor of pulling the leaves. He says this season has been more favorable than the last. The worms have been longer in maturing than if the weather had been warmer, but they could not be more healthy. About 60,000 of his worms had commenced to spin their cocoons. The remainder, 200,000, are yet small, being more recently hatched.

In Santa Barbara County, California, Mr. A. Packard has five acres in mulberry trees, eight years old, planted at 10 by 18 feet distance. Mr. J. E. Goux also has a plantation of the same size and age, planted 20 by 20 feet distance. Dr. James Ord has a similar plantation.

The California State Board of Agriculture have awarded State premiums to Mrs. E. M. Weston, of Sacramento, for 625,000 silk cocoons; A. Packard, of Santa Barbara, for 150,000 cocoons; H. G. Bollow, of Yolo County, for 100,000 cocoons; and to several parties for mulberry plantations.

TEXAS CATTLE.—There has recently been established at Schuyler, Nebraska, on the Union Pacific railroad, seventy-five miles west of Omaha, a depot for the sale of Texas cattle. 12,000 to 15,000 are now at this point on their way to the eastern markets. The Kansas Pacific railway is sending forward 600 head of cattle each day. It is stated that there are now about 50,000 head in the vicinity of Abilene, awaiting shipment and sale, and that 200,000 head of Texas cattle have crossed the Red River.

SOUTH AMERICAN CATTLE IN ENGLAND.—Alfred Fox, United States consul at Falmouth, England, in a recent letter to this Department, writes as follows:

The farmers here appear to be paying increased attention to the breeding and fattening of cattle as an important source of profit. A steamer has lately landed here, in fair condition, with a few exceptions, from Montevideo, 142 oxen, which cost about £4 per head on board at Montevideo; 6 cows, which cost about £3 per head; 5 calves, which go with the cows; 297 sheep, which cost about 5s. per head; and 6 horses, which cost about £4 per head.

About 70 oxen were killed on the voyage, owing, as was alleged, to injuries sustained by the rough manner in which they were put on board, to the length of the voyage, (forty-three days,) to the high temperature at Bahia, where the steamer called to repair machinery, and to the want of experience in the requirements on board in this the first experiment. Such a traffic might perhaps be advantageously carried on between Montevideo and the United States.

It is the invariable practice in this county to make butter from clotted cream, which is generally produced by placing the pan of milk over a hot iron plate, but it must not be allowed to boil. The cream becomes very rich and of a greater consistency, and is also largely used with ripe strawberries, raspberries, fruit pies, &c. This plan is supposed to have been introduced here by the Phœnicians, who are said to have visited Cornwall three thousand years ago in quest of tin.

A BOARD OF AGRICULTURE FOR NEW HAMPSHIRE.—The legislature of this State has passed a bill establishing a board of agriculture, to consist of one member from each county, to be nominated by the governor and confirmed by the council. It is made the duty of the board to investigate subjects in relation to agriculture and kindred arts; to cause to be analyzed samples of commercial fertilizers offered for sale in the State; to collect and distribute grains and other seeds, &c. Returns are to be secured from all parts of the State, and an annual report is to be issued, to be distributed as other public documents. The members of the board are to receive no compensation beyond necessary expenses.

TRICHINÆ IN OREGON.—It is stated in the Oregonian that a party of French, who had camped at Wilhoit's Soda Springs, killed a deer which was found to be literally alive with trichinæ. A number of families ate of it before the discovery. The trichinæ were first noticed in the ham, and, upon closer observation, in every part of the animal. The discovery of trichinæ in venison killed in its "mountain fastness" has created quite an excitement among the hunters.

WOOL IN COLORADO.—A Colorado correspondent writes that the establishment of a woolen factory at Denver has already stimulated wool-growers to the introduction of thorough-bred Cotswold and South-down bucks to cross with the native sheep.

METEOROLOGY.

[COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY THE OBSERVERS OF THE SMITHSONIAN INSTITUTION.]

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and amount of rain-fall, (in inches and tenths,) for Jan., 1870, as reported by the observers at the stations named. Observations daily at 7 a. m. and 2 and 9 p. m. Tables from reports received up to July 15th—notes from reports received up to July 13th.

[illegible]

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum temperature. | Date. | Minimum temperature. | Mean temperature. | Rain-fall. |
|-----------------------|--------------|--------------------------|--------|----------------------|------------------------|----------------------|-------------------|------------|
| MASSACHUSETTS. | | | | | | | | |
| Kingston | Plymouth | G. S. Newcomb | 25 | 95 | 21 | 53 | 68.9 | 2.00 |
| Lawrence | Essex | John Fallon | 25 | 99 | 10 | 48 | 63.9 | 3.49 |
| Milton | Norfolk | Rev. A. K. Teele | 25 | 98 | 10, 11 | 54 | 70.1 | 2.60 |
| Cambridge | Middlesex | Rev. & Mrs. J. B. Perry | 25 | 96 | 11 | 53 | 72.3 | ..... |
| North Billerica | do | Rev. E. & W. W. Nason | 25 | 95 | 11 | 52 | 71.0 | ..... |
| West Newton | do | Jno. H. Bixby | 25 | 104 | 11 | 52 | 73.8 | 7.96 |
| New Bedford | Bristol | Sam'l Rodman | 25 | 90 | 21 | 54 | 66.7 | 3.48 |
| Mendon | Worcester | Jno. G. Metcalf, M. D. | 25 | 92 | 10 | 49 | 69.1 | 3.40 |
| Lunenburg | do | Geo. A. Cunningham | 25 | 97 | 10 | 50 | 71.0 | 3.80 |
| Amherst | Hampshire | Prof. E. S. Snell | 25 | 93 | 10, 11 | 54 | 70.5 | 2.73 |
| Richmond | Berkshire | Wm. Bacon | 20 | 92 | 13 | 59 | 73.8 | 9.56 |
| Williams College | do | Prof. A. Hopkins | 25, 27 | 89 | 22 | 54 | 70.0 | 5.05 |
| Hinsdale | do | Rev. E. Dewhurst | 27 | 89 | 10, 11 | 48 | 69.0 | 5.80 |
| Averages | | | | | | | 70.4 | 4.56 |
| RHODE ISLAND. | | | | | | | | |
| Newport | Newport | W. A. Barber | 25, 28 | 86 | 11, 22 | 58 | 68.2 | 2.11 |
| CONNECTICUT. | | | | | | | | |
| Columbia | Tolland | Wm. H. Yeomans | 25 | 95 | 10 | 54 | 71.9 | 3.55 |
| Middletown | Middlesex | Prof. Jno. Johnston | 24, 25 | 95 | 11 | 53 | 71.8 | 2.72 |
| Southington | Hartford | Luman Andrews | 25 | 92 | 11 | 52 | 72.7 | 4.35 |
| Colebrook | Litchfield | Charlotte Rockwell | 25 | 90 | 10, 11 | 53 | 70.3 | 7.06 |
| Brookfield | Fairfield | Rev. S. W. Roe | 25 | 94 | { 2, 7, 10 11, 22 } | 60 | 71.2 | 4.60 |
| Averages | | | | | | | 71.6 | 44.6 |
| NEW YORK. | | | | | | | | |
| Moriches | Suffolk | E. A. Smith & daugh'rs | 25 | 102 | 10 | 58 | 71.9 | 1.12 |
| South Hartford | Washington | G. M. Ingalsbe | 27 | 94 | 22 | 57 | 75.4 | 3.35 |
| Garrison's | Putnam | Thos. B. Arden | 25, 28 | 92 | 11 | 56 | 72.5 | 3.00 |
| Throg's Neck | West Chester | Miss E. Morris | 25 | 93 | 11 | 56 | 71.9 | ..... |
| White Plains | do | Prof. G. R. Willis & dau | 28 | 89 | 11 | 57 | 72.2 | ..... |
| Cooper Union | New York | Prof. O. W. Morris | 25 | 93 | 11 | 57 | 74.1 | 2.85 |
| Rutger's Fem. Col. | do | Mrs. M. M. Marsh | 25 | 95 | 10, 11 | 60 | 76.7 | 1.02 |
| Flatbush | Kings | Rev. Eli T. Mack | 25 | 93 | 10 | 55 | 75.1 | 1.73 |
| Brooklyn | do | Isaac P. Mailler | 25, 28 | 96 | 11 | 59 | 74.7 | 3.38 |
| Glaseo | Ulster | D. B. Hendricks | 25 | 93 | 3 | 52 | 73.4 | 3.13 |
| Newburg | Orange | Jas. H. Gardiner | 25 | 95 | 10 | 59 | 75.4 | 4.63 |
| Minerville | Montgomery | J. W. Bussing | 28 | 95 | 22 | 53 | 74.3 | 3.50 |
| Bannerville | Schoharie | G. S. France | 27 | 100 | 10 | 57 | 74.3 | 4.00 |
| Cooperstown | Otsego | G. Pomeroy Keese | 27 | 92 | 22 | 52 | 72.5 | 0.95 |
| Gouverneur | St. Lawrence | C. H. Russell | 25 | 90 | 21 | 50 | 70.7 | 3.50 |
| North Hammond | do | C. A. Wooster | 25 | 95 | 21, 22 | 60 | 78.4 | 0.97 |
| Houseville | Lewis | Walter D. Yale | 25, 27 | 92 | 21 | 53 | 72.8 | 0.80 |
| Utica | Oneida | J. Gilbert Williams | 28 | 94 | 22 | 53 | 73.7 | 3.29 |
| South Trenton | do | Storrs Barrows | 28 | 94 | 6 | 50 | 71.2 | 3.57 |
| Cazenovia | Madison | Prof. Wm. Soule | 27 | 92 | 22 | 55 | 71.2 | ..... |
| Oneida | do | S. Spooner, M. D. | 28 | 93 | 21 | 53 | 72.8 | 4.59 |
| Depauville | Jefferson | Henry Haas | 28 | 90 | 22 | 53 | 70.8 | 2.27 |
| Oswego | Oswego | Wm. S. Malcom | 3 | 82 | 21 | 55 | 68.3 | 2.15 |
| Palermo | do | E. B. Bartlett | 25 | 92 | 21 | 52 | 71.6 | 0.70 |
| North Volney | do | J. M. Patrick | 25, 27 | 93 | 21 | 53 | 72.9 | ..... |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain-fall. |
|------------------------|--------------------|-------------------------------|--------------------|---------------------------|-----------|---------------------------|------------------------|------------|
| NEW YORK—Con'd. | | | | | | | | |
| Waterburg | Tompkins | D. Trowbridge | 25 | 34 | 21 | 49 | 72.6 | In. |
| Nichols | Tioga | Rob't Howell | 25 | 95 | 21 | 50 | 71.5 | ..... |
| Newark Valley | do | Rev. Sam'l Johnson | 25 | 94 | 21, 22 | 50 | 70.9 | 3.40 |
| Himrods | Yates | Gilbert D. Baker | 25, 26, 27 | 89 | 21 | 52 | 70.4 | 2.69 |
| Little Genesee | Alleghany | Dan'l Edwards | 25 | 94 | 22 | 48 | 69.3 | 4.57 |
| Lockport | Niagara | B. Wheaton Clark | 26 | 91 | 21 | 56 | 70.8 | 4.37 |
| Buffalo | Erie | Wm. Ives | 29 | 95 | 21 | 55 | 70.5 | 6.30 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 72.7 | 2.93 |
| NEW JERSEY. | | | | | | | | |
| Paterson | Passaic | Wm. Brooks | 20 | 95 | 10 | 57 | 74.4 | 4.20 |
| Newark | Essex | W. A. Whitehead | 28 | 93 | 11 | 55 | 72.3 | 3.13 |
| Trenton | Mercer | E. R. Cook | 26 | 94 | 1, 10, 11 | 62 | 77.2 | 3.27 |
| Rio Grande | Cape May | Mrs. J. R. Palmer | 26, 30 | 96 | 2, 3 | 60 | 74.0 | 3.25 |
| Moorestown | Burlington | Thos. J. Beans | 28 | 95 | 4 | 57 | 73.3 | 2.80 |
| New Germantown | Hunterdon | A. B. Noll | 28 | 93 | 11 | 58 | 73.0 | 5.56 |
| Haddonfield | Camden | John Boodle | 28 | 92 | 1 | 59 | 72.0 | 2.80 |
| Newfield | Gloucester | E. D. Couch | 19 | 100 | 1 | 61 | 76.0 | ..... |
| Greenwich | Cumberland | Miss R. C. Sheppard | 26, 29 | 92 | 2 | 61 | 74.1 | 2.38 |
| Vineland | do | John Ingraham, M. D. | 29 | 99 | 1 | 57 | 76.1 | 4.32 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 74.3 | 3.52 |
| PENNSYLVANIA. | | | | | | | | |
| Hamlington | Wayne | Jas. D. Stocker | 27 | 91 | 21 | 52 | 70.9 | 4.65 |
| Dyberry | do | Theodore Day | 28 | 96 | 21, 22 | 52 | 69.4 | 2.90 |
| Fallsington | Bucks | Eben'r Hance | 26, 28 | 94 | 10, 11 | 60 | 74.7 | 3.60 |
| Philadelphia | Philadelphia | Prof. J. A. Kirkpatrick | 28 | 94 | 11 | 61 | 76.4 | 2.54 |
| Germantown | do | Thos. Meehan | 25, 26, 28 | 96 | 22 | 60 | 75.7 | ..... |
| Do | do | Ernest Turner | 28, 29 | 94 | 7 | 57 | 74.3 | 2.36 |
| Horsham | Montgomery | Miss Anna Spencer | 28 | 91 | 1 | 58 | 72.1 | 4.25 |
| Plymouth Meeting | do | M. H. Corson | 28 | 92 | 1, 22 | 59 | 73.2 | 3.40 |
| White Hall | Lehigh | Edw'd Kohler | 29 | 93 | 22 | 53 | 74.0 | ..... |
| Factoryville | Wyoming | Rodman Sisson | 27 | 94 | 22 | 54 | 71.0 | 4.92 |
| Reading | Berks | J. Heyl Raser | 26 | 94 | 22 | 61 | 74.6 | 5.69 |
| West Chester | Chester | Geo. Martin, M. D. | 29 | 95 | 11 | 59 | 73.9 | 6.15 |
| Parkersville | do | F. Darlington, M. D. | 29 | 96 | 1, 11 | 60 | 74.5 | 5.69 |
| Tamaqua | Schuylkill | John Haworth | 27 | 91 | 21 | 47 | 69.9 | 8.30 |
| Catawissa | Columbia | A. Curtis | 27 | 94 | 21 | 52 | 69.8 | ..... |
| Ephrata | Lancaster | W. H. Spera | 19, 24, 27, 28, 29 | 94 | 11 | 58 | 72.0 | 4.73 |
| Carlisle | Cumberland | Wm. H. Cook, M. D. | 26 | 96 | 12 | 57 | 74.3 | 7.80 |
| Fountain Dale | Adams | S. C. Walker | 26 | 94 | 11 | 57 | 72.5 | 6.70 |
| Tioga | Tioga | E. T. Bentley | 27 | 94 | 22 | 48 | 70.6 | 3.30 |
| Lewisburg | Union | Prof. C. S. James | 26, 28 | 92 | 1 | 52 | 72.2 | 5.17 |
| Grampian Hills | Clearfield | Elisha Fenton | 24, 25, 28 | 92 | 11, 22 | 50 | 68.0 | 2.83 |
| Johnstown | Cambria | David Peelor | 25 | 92 | 21 | 52 | 67.8 | 4.02 |
| Franklin | Venango | Rev. M. A. Tolman | 27 | 95 | 22 | 52 | 70.3 | 5.60 |
| Pittsburg | Alleghany | George Albree | 26 | 91 | 11 | 56 | 71.3 | 3.40 |
| Connellsville | Fayette | John Taylor | 26, 27 | 98 | 11 | 50 | 72.6 | ..... |
| Brownsville | do | J. Allen Hubbs, M. D. | 27 | 92 | 9, 22 | 60 | 75.0 | ..... |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

[illegible]

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum temperature. | Date. | Minimum temperature. | Mean temperature. | Rain-fall. |
|------------------------|----------------|-------------------------|----------------------------|----------------------|------------|----------------------|-------------------|------------|
| TENNESSEE. | | | | | | | | |
| Elizabethton | Carter | Chas. H. Lewis..... | 26, 27 | 94 | 10, 11, 13 | 54 | 71.4 | In. 14.15 |
| Lookout Mountain | Hamilton | Rev. C. F. P. Bancroft. | { 22, 23, 25, 26, 28 | 88 | 10 | 54 | 74.3 | ..... |
| McMinnville..... | Warren..... | T. P. Wright | { 22, 23, 25 | 89 | 10, 11 | 55 | 70.5 | ..... |
| Austin..... | Wilson..... | P. B. Calhoun..... | { 24, 25, 26, 27 | 91 | 10, 11, 13 | 56 | 69.5 | 8.90 |
| Clarksville..... | Montgomery.. | Prof. Wm. M. Stewart. | 23 | 88 | 11 | 53 | 70.8 | 8.11 |
| Trenton | Gibson..... | W. T. Grigsby | 23 | 93 | 11 | 53 | 74.5 | 5.60 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 71.8 | 9.19 |
| KENTUCKY. | | | | | | | | |
| Pine Grove | Clarke | S. D. Martin, M. D.... | 25 | 92 | 9, 11 | 54 | 71.4 | 3.64 |
| Shelby City..... | Boyle | Howard Shriver | 25 | 92 | 12 | 59 | 73.9 | 5.50 |
| Louisville..... | Jefferson..... | Mrs. L. Young | 24, 25 | 94 | 10 | 52 | 73.1 | 2.97 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 72.8 | 4.04 |
| OHIO. | | | | | | | | |
| Salem..... | Columbiana... | J. E. Pollock..... | 26, 27 | 95 | 21 | 52 | 70.4 | 4.04 |
| Steuenville..... | Jefferson..... | Joseph B. Doyle | 25 | 90 | 22 | 53 | 74.0 | 4.33 |
| Painesville..... | Lake | E. J. Ferris | 25, 26, 30 | 89 | 10 | 54 | 69.1 | 6.45 |
| Milnersville | Guernsey | Rev. D. Thompson..... | 25 | 93 | 22 | 48 | 70.3 | 4.26 |
| Cleveland | Cuyahoga..... | Mr. & Mrs. G. A. Hyde. | 26 | 91 | 10, 12 | 52 | 68.3 | 2.38 |
| Wooster..... | Wayne..... | William Hoover | 26 | 102 | 12 | 56 | 73.9 | ..... |
| Adams' Mills..... | Muskingum... | Charles A. Stilwell .. | 26 | 94 | 11 | 55 | 71.8 | 3.65 |
| Pennsville..... | Morgan..... | T. J. Kingman | 24, 25, 27 | 92 | 11, 12 | 53 | 71.6 | 2.60 |
| Kelley's Island | Erie | Geo. C. Huntington... | 26 | 93 | 10 | 60 | 73.1 | 3.85 |
| Sandusky | do | Thomas Neill | 25, 26, 28 | 90 | 10 | 59 | 73.1 | 5.69 |
| North Fairfield | Huron..... | O. Burrass | 26 | 92 | 11 | 54 | 69.6 | 2.91 |
| Gambier..... | Knox | W. B. French | 26, 28 | 89 | 11 | 51 | 68.0 | 2.93 |
| Westerville..... | Franklin..... | Prof. John Haywood .. | 26, 28, 30 | 94 | 10 | 50 | 73.1 | 3.77 |
| North Bass Island.. | Ottawa | Geo. R. Morton, M. D.. | 28 | 97 | 9, 21 | 59 | 72.5 | 2.74 |
| Marion..... | Marion..... | H. A. True, M. D. | 26 | 93 | 11 | 54 | 70.3 | 5.14 |
| Hillsboro' | Highland..... | J. McD. Mathews, M.D. | 25 | 92 | 11, 12 | 54 | 69.9 | 3.27 |
| Toledo | Lucas..... | J. B. Trembly, M. D.... | 25 | 93 | 11 | 55 | 72.6 | 4.66 |
| Bowling Green..... | Wood..... | John Clarke | 28 | 102 | 11 | 54 | 74.5 | 3.20 |
| Kenton..... | Hardin..... | C. H. Smith, M. D..... | 26 | 101 | 12, 14, 16 | 60 | 77.1 | 5.51 |
| Urbana University. | Champaign .. | M. G. Williams | 26 | 93 | 10, 11 | 54 | 71.0 | 2.47 |
| Springfield..... | Clark | G. P. Hachenberg, M.D. | 26 | 96 | 11 | 54 | 73.5 | 2.20 |
| Bethel..... | Clermont..... | Geo. W. Crane | 25, 28 | 93 | 11 | 53 | 60.3 | 3.13 |
| Jacksonburg..... | Butler | I. B. Owsley, M. D.... | 24, 25 | 96 | 11, 13 | 52 | 72.5 | 3.25 |
| Mt. Auburn Inst'c.. | Hamilton..... | Prof. I. H. White..... | 26 | 92 | 11 | 55 | 74.3 | 4.76 |
| Cincinnati..... | do | G. W. Harper..... | 25 | 97 | 11 | 55 | 73.1 | 4.84 |
| Do..... | do | R. C. Phillips | 25 | 95 | 10 | 58 | 76.7 | 4.25 |
| College Hill..... | do | John W. Hammitt | 28 | 97 | 10 | 50 | 76.0 | 4.31 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 71.9 | 3.86 |
| MICHIGAN. | | | | | | | | |
| Detroit | Wayne..... | F. W. Higgins | 28 | 96 | 10, 11 | 53 | 69.5 | 3.67 |
| Monroe City..... | Monroe..... | Miss H. I. Whelpley .. | 28 | 98 | 11 | 56 | 73.6 | 4.55 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date | Minimum tem- perature. | Mean tem- perature. | Rain-fall. |
|---------------------|-------------------|----------------------------------|-----------------------|---------------------------|------------|---------------------------|------------------------|------------|
| MICHIGAN—Cont'd. | | | | ° | | ° | ° | In. |
| Ann Arbor | Washtenaw | Mrs. N. H. Winchell | 25, 30 | 95 | 11 | 52 | 70.8 | 2.95 |
| Alpena | Alpena | J. W. Paxton | 26 | 80 | 11 | 44 | 62.6 | 3.11 |
| Litchfield | Hillsdale | R. Bullard | 24, 30 | 92 | 10 | 50 | 69.1 | 5.45 |
| Coldwater | Branch | N. L. Southworth | 24 | 96 | 8 | 52 | 68.7 | 4.31 |
| Grand Rapids | Kent | E. S. Holmes, D. D. S. | 27 | 102 | 10 | 53 | 73.1 | 3.66 |
| Northport | Lenawee | Rev. Geo. N. Smith | 27 | 93 | 9, 12 | 48 | 66.3 | 3.50 |
| Otsego | Allegan | Milton Chase, M. D. | 25 | 106 | 9 | 48 | 70.9 | ..... |
| Copper Falls | Keweenaw | S. H. Whittlesey, M. D. | 23 | 91 | 9, 10 | 41 | 64.7 | 1.00 |
| Ontonagon | Ontonagon | Edwin Ellis, M. D. | { 22, 24, 25, 29 } | { 90 } | 12 | 48 | 67.6 | ..... |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 68.8 | 3.58 |
| INDIANA. | | | | | | | | |
| Aurora | Dearborn | Geo. Sutton, M. D. | 24, 25 | 100 | 10, 11, 13 | 54 | 71.0 | 3.01 |
| Vevay | Switzerland | Chas. G. Boerner | 25 | 95 | 10 | 56 | 72.8 | 3.80 |
| Mt. Carmel | Franklin | J. A. Applegate and daughter. | 25 | 94 | 11 | 54 | 73.0 | 3.80 |
| Spiceland | Henry | Wm. Dawson | 25 | 96 | 10 | 51 | 72.6 | 5.36 |
| Laconia | Harrison | Adam Crozier | 25 | 93 | 10, 11, 12 | 56 | 72.9 | 2.06 |
| Knightstown | Rush | D. Deem | 25 | 98 | 11 | 52 | 72.9 | 6.12 |
| Near La Porte | La Porte | F. J. Andrew | 30 | 97 | 9, 11, 13 | 55 | 72.2 | 3.26 |
| Rensselaer | Jasper | J. H. Loughridge | 29 | 98 | 11 | 53 | 73.3 | 6.85 |
| Merom | Sullivan | Thomas Holmes | 25 | 98 | 10 | 53 | 73.9 | 2.75 |
| New Harmony | Posey | John Chappell Smith | 21, 30 | 94 | 11 | 55 | 74.2 | 3.84 |
| Averages ..... | ..... | ..... | ..... | ..... | ..... | ..... | 72.9 | 4.09 |
| ILLINOIS. | | | | | | | | |
| Chicago | Cook | J. G. Langguth, jr. | 30 | 100 | 8 | 54 | 71.8 | 1.70 |
| Near Chicago | do | Sam'l Brookes | 30 | 100 | 8, 11, 13 | 54 | 68.9 | ..... |
| Evanston | do | Prof. Oliver Marcy | 30 | 97 | 8 | 52 | 63.1 | 1.37 |
| Marengo | McHenry | J. W. James | 30 | 100 | 11 | 45 | 69.8 | 0.99 |
| Charleston | Coles | Charles Gramesley | 25, 30 | 94 | 9, 10 | 53 | 72.7 | 2.86 |
| Mattoon | do | W. E. Henry | 24, 25 | 93 | 9 | 54 | 73.3 | 3.38 |
| Aurora | Kane | A. Spaulding, M. D. | 24 | 99 | 10 | 50 | 69.4 | 1.16 |
| Louisville | Clay | D. H. Chase, M. D. | 25 | 99 | 10 | 52 | 73.1 | 4.30 |
| Golconda | Pope | Wm. V. Eldredge | 27 | 99 | 15 | 44 | 73.0 | 3.70 |
| Belvidere | Boone | G. B. Moss | 30 | 100 | 9 | 51 | 70.1 | 0.54 |
| Ottawa | La Salle | Mrs. E. H. Merwin | 23 | 105 | 9 | 55 | 75.3 | 1.39 |
| Decatur | Macon | Timothy Dudley | 29 | 94 | 9, 12 | 54 | 73.0 | 1.50 |
| Pana | Christian | Thos. Finley, M. D. | 24, 30 | 96 | 12 | 52 | 73.8 | 1.30 |
| Winnebago | Winnebago | J. W. and Miss Tolman | 24, 25 | 99 | 8, 11, 12 | 50 | 71.4 | 2.12 |
| Rochelle | Ogle | Dan'l Carey | 27 | 100 | 11, 12 | 50 | 70.5 | ..... |
| Wyanet | Bureau | E. S. and Miss I. G. Phelps. | 24 | 104 | 7 | 46 | 73.0 | 0.70 |
| Tiskilwa | do | Verry Aldrich | 24, 30 | 102 | 11 | 50 | 73.0 | ..... |
| Hennepin | Putnam | Smiley Shepherd | { 24, 27, 29, 30 } | { 100 } | 10, 12 | 48 | 71.0 | ..... |
| Do | do | Ethan Osborn | 30 | 104 | 10 | 47 | 74.3 | ..... |
| Elmira | Stark | O. A. Blanchard | 30 | 100 | 12 | 50 | 75.0 | 0.38 |
| Peoria | Peoria | Fred'k Brendel | 30 | 100 | 9, 12, 13 | 56 | 74.6 | 0.75 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain-fall. |
|------------------------|------------------|-------------------------------|----------|---------------------------|-----------|---------------------------|------------------------|------------|
| ILLINOIS—Cont'd. | | | | ° | | ° | ° | In. |
| Springfield..... | Sangamon..... | G. M. Brinkerhoff..... | 30 | 103 | 8 | 52 | 75.9 | ..... |
| Dubois..... | Washington..... | Wm. C. Spencer..... | 24 | 95 | 12 | 44 | 72.7 | 4.49 |
| Galesburg..... | Knox..... | Prof. Wm. Livingston..... | 29 | 96 | 11 | 56 | 75.0 | 1.27 |
| Manchester..... | Scott..... | Dr. J. and C. W. Grant..... | 25 | 99 | 11 | 50 | 75.2 | 2.60 |
| Mt. Sterling..... | Brown..... | Rev. A. Duncan..... | 29,30 | 95 | ..... | ..... | 82.7 | ..... |
| Andalusia..... | Rock Island..... | E. H. Bowman, M. D..... | 27 | 98 | 9,13 | 52 | 72.0 | ..... |
| Augusta..... | Hancock..... | S. B. Mead, M. D..... | 30 | 99 | 11 | 51 | 73.2 | 2.35 |
| Warsaw..... | do..... | B. Whitaker..... | 30 | 100 | 11 | 53 | 72.2 | 2.89 |
| Averages..... | | | | | | | 72.7 | 1.99 |
| WISCONSIN. | | | | | | | | |
| Sturgeon Bay..... | Dove..... | Rufus M. Wright..... | 24 | 94 | 10 | 49 | 69.1 | 2.20 |
| Manitowoc..... | Manitowoc..... | Jacob Lüps..... | 30 | 97 | 10 | 50 | 67.5 | 3.35 |
| Hingham..... | Sheboygan..... | John De Lyser..... | 30 | 103 | 11 | 46 | 69.1 | ..... |
| Milwaukee..... | Milwaukee..... | I. A. Lapham, LL.D..... | 30 | 100 | 11 | 45 | 67.8 | 2.62 |
| Geneva..... | Walworth..... | W. H. Whiting..... | 24,30 | 99 | 12 | 50 | 69.9 | 1.45 |
| Embarrass..... | Waupacca..... | E. Everett Breed..... | 24,28,30 | 96 | 8 | 48 | 68.7 | 3.05 |
| Rocky Run..... | Columbia..... | W. W. Curtis..... | 30 | 99 | 9 | 49 | 72.4 | 1.06 |
| Madison..... | Dane..... | W. W. Daniels..... | 30 | 98 | 10 | 52 | 71.3 | 1.92 |
| Edgerton..... | Rock..... | H. J. Shints..... | 30 | 102 | 8 | 52 | 74.6 | 3.50 |
| Mosinee..... | Marathon..... | Jno. O'Donoghue..... | 28 | 96 | 7 | 46 | 67.6 | 2.91 |
| Baraboo..... | Sauk..... | M. C. Waite..... | 26 | 102 | 4 | 56 | 77.1 | 1.88 |
| New Lisbon..... | Juneau..... | J. L. Dungan..... | 23 | 104 | 11 | 49 | 71.4 | ..... |
| Tunnel City..... | Monroe..... | Rev. Geo. Pegler..... | 29,30 | 100 | 7 | 44 | 70.4 | ..... |
| Bayfield..... | Bayfield..... | Andrew Tate..... | 23 | 100 | 11 | 40 | ..... | ..... |
| Averages..... | | | | | | | 70.5 | 2.16 |
| MINNESOTA. | | | | | | | | |
| Afton..... | Washington..... | Dr. B. F. & Mrs. Babcock..... | 29 | 99 | 7,9 | 48 | 71.4 | 0.90 |
| St. Paul..... | Ramsey..... | Rev. A. B. Paterson..... | 29 | 99 | 9 | 49 | 75.4 | 0.79 |
| Minneapolis..... | Hennepin..... | Wm. Cheney..... | 29 | 96 | 7,9 | 49 | 70.9 | 1.56 |
| Sibley..... | Sibley..... | C. W. & C. E. Woodbury..... | 27,29 | 93 | 7 | 49 | 71.8 | 0.38 |
| Koniska..... | McLeod..... | T. M. & M. H. Young..... | 26,28,29 | 94 | 7,8 | 41 | 67.4 | 0.50 |
| New Ulm..... | Brown..... | Charles Roos..... | 29 | 98 | 7 | 48 | 72.8 | 2.25 |
| Madelia..... | Watonwan..... | W. W. Murphy..... | 26 | 100 | 7 | 49 | 74.8 | 0.40 |
| Averages..... | | | | | | | 72.1 | 0.97 |
| IOWA. | | | | | | | | |
| Clinton..... | Clinton..... | Dr. J. P. Farnsworth..... | 29 | 101 | 8,9,10,11 | 50 | 70.2 | 2.75 |
| Waukon..... | Allamakee..... | E. M. Hancock..... | 29 | 96 | 8 | 46 | 69.1 | ..... |
| Monticello..... | Jones..... | Rufus P. Smith..... | 27 | 102 | 9 | 35 | 72.4 | 1.60 |
| Bowen's Prairie..... | do..... | Sam'l Woodworth..... | 23 | 98 | 7,8,9 | 48 | 71.3 | 1.50 |
| Ft. Madison..... | Lee..... | Dan'l McCready..... | 29,30 | 100 | 10 | 52 | 76.0 | 1.12 |
| Guttenberg..... | Clayton..... | Jas. P. Dickerson..... | 30 | 103 | 8 | 48 | 71.2 | ..... |
| Mt. Vernon..... | Linn..... | Prof. A. Collins..... | 30 | 98 | 7 | 48 | 70.6 | ..... |
| Iowa City..... | Johnson..... | Prof. Theo. S. Parvin..... | 30 | 99 | 8,11 | 50 | 71.8 | 1.30 |
| Independence..... | Buchanan..... | Geo. Warne, M. D..... | 29 | 102 | 9 | 51 | 74.0 | 0.70 |
| Near Independence..... | do..... | Mrs. D. B. Wheaton..... | 30 | 100 | 9 | 51 | 74.2 | 1.45 |
| Waterloo..... | Black Hawk..... | T. Steed..... | 30 | 102 | 4 | 43 | 72.5 | 1.20 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain-fall. |
|----------------------|------------------|----------------------------|-----------------------|---------------------------|-------------------------------|---------------------------|------------------------|------------|
| IOWA—Continued. | | | | | | | | |
| Rockford..... | Floyd..... | H. Wadey..... | 29 | 93 | 9, 10 | 54 | 73.0 | In. |
| Algona..... | Kossuth..... | James H. Warren..... | 26 | 94 | 11 | 50 | 70.2 | ..... |
| West Bend..... | Palo Alto..... | Ph. Dorweiler..... | 29 | 95 | 6, 8 | 48 | 71.9 | ..... |
| Webster City..... | Hamilton..... | Clayton J. Croft..... | 29 | 94 | 8 | 48 | 70.9 | 0.50 |
| Boonesboro'..... | Boone..... | E. Babcock..... | { 23, 26, 27, 28 } | { 96 98 } | 8 | 46 | 70.5 | 0.48 |
| Grant City..... | Sac..... | Mr. and Mrs. Miller..... | | | 8 | 51 | 74.4 | 0.77 |
| Logan..... | Harrison..... | Jacob T. Stern..... | 29 | 98 | 10 | 43 | 69.3 | 0.30 |
| Woodbine..... | do..... | David R. Witter..... | 30 | 100 | 7, 8, 9 | 48 | 70.6 | 0.22 |
| West Union..... | Fayette..... | Frank McClintock..... | 30 | 101 | 8 | 53 | 73.4 | 1.03 |
| Averages..... | ..... | ..... | ..... | ..... | ..... | ..... | 71.9 | 1.07 |
| MISSOURI. | | | | | | | | |
| St. Louis University | St. Louis..... | Rev. F. H. Stuntebeck..... | 30 | 94 | 9, 10 | 54 | 73.5 | 1.46 |
| Allenton..... | do..... | A. Fendler, M. D..... | 29 | 99 | 11 | 51 | 71.9 | 4.88 |
| Hematite..... | Jefferson..... | Jno. M. Smith..... | 23 | 93 | 11 | 52 | 75.3 | 1.25 |
| Hannibal..... | Ralls..... | Frank I. Hearne..... | 30 | 98 | 10, 12 | 54 | 74.2 | 2.20 |
| Rolla..... | Phelps..... | Homer Ruggles..... | 30 | 96 | 11 | 51 | 73.9 | 2.73 |
| Jefferson City..... | Cole..... | Nicolas de Wyl..... | 30 | 97 | 10 | 54 | 75.8 | ..... |
| Kansas City..... | Jackson..... | Sam'l W. Salisbury..... | 30 | 98 | 7, 9, 10 | 52 | 72.5 | 1.25 |
| Harrisonville..... | Cass..... | John Christian..... | 23 | 100 | { 6, 7, 8, 9, 11, 12, 13 } | 53 | 75.3 | 1.99 |
| Oregon..... | Holt..... | Wm. Kaucher..... | 22, 30 | 98 | 9 | 51 | 73.4 | 1.27 |
| Averages..... | ..... | ..... | ..... | ..... | ..... | ..... | 74.0 | 2.22 |
| KANSAS. | | | | | | | | |
| Atchison..... | Atchison..... | Dr. H. B. & Miss Horn..... | 30 | 101 | 8 | 55 | 74.3 | 3.05 |
| Leavenworth..... | Leavenworth..... | Dr. J. Stayman..... | 30 | 102 | 12 | 53 | 73.6 | 1.95 |
| Olathe..... | Johnson..... | Watts Beckwith..... | 21 | 100 | 6 | 54 | 73.0 | 2.70 |
| Paola..... | Miami..... | L. D. Walrath..... | 30 | 99 | { 8, 9, 10, 11, 12 } | 56 | 73.8 | 1.00 |
| Lawrence..... | Douglas..... | Prof. F. H. Snow..... | 30 | 101 | { 7, 8, 9, 10, 11 } | 56 | 73.7 | 1.88 |
| Holton..... | Jackson..... | James Watters, M. D..... | 30 | 101 | 6 | 53 | 74.6 | 1.19 |
| State Agr. College.. | Riley..... | Prof. B. F. Mudge..... | 30 | 102 | 8, 9 | 55 | 74.6 | 0.79 |
| Council Grove..... | Morris..... | A. Woodworth, M. D..... | 30 | 100 | 12 | 52 | 76.6 | 2.50 |
| Averages..... | ..... | ..... | ..... | ..... | ..... | ..... | 74.3 | 1.88 |
| NEBRASKA. | | | | | | | | |
| De Soto..... | Washington..... | Charles Seltz..... | 29 | 101 | 8 | 49 | 74.0 | 0.89 |
| Bellevue..... | Sarpy..... | Mrs. E. E. Caldwell..... | 29 | 96 | 8 | 53 | 74.2 | 2.10 |
| New Castle..... | Dixon..... | Louis H. Smith..... | 29 | 99 | 9 | 47 | 72.9 | ..... |
| Averages..... | ..... | ..... | ..... | ..... | ..... | ..... | 73.7 | 1.50 |
| UTAH TERRITORY. | | | | | | | | |
| Great Salt Lake City | Great Salt Lake | W. W. Phelps..... | 27 | 95 | 1, 2, 17 | 45 | 66.5 | ..... |
| Coalville..... | Summit..... | Thomas Bullock..... | 25 | 93 | 4 | 42 | 65.2 | ..... |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain-fall. |
|--------------------------|-----------------|---|-----------|---------------------------|-------|---------------------------|------------------------|-------------|
| CALIFORNIA. | | | | | | | | |
| Monterey | Monterey | C. A. Canfield, M. D... | 4 | 81 | 2, 16 | 44 | 64.3 | In. 0.00 |
| Cahto | Mendocino | A. W. Thornton, M. D. | 6 | 95 | 29 | 59 | 66.7 | 0.02 |
| Visalia | Tulare | James W. Blake | 5, 10, 11 | 94 | 1 | 59 | 75.9 | 0.00 |
| Averages | | | | | | | 69.0 | 0.01 |
| COLORADO TERRI- TORY. | | | | | | | | |
| Denver | Arapahoe | { Wm. N. Byers and } { S. T. Sopris. } | 29 | 94 | 3 | 48 | 68.2 | 0.52 |

STATE AVERAGES FOR JUNE, 1870.

Table of the maximum and minimum temperatures (with dates prefixed) in the several States, &c., named, with the average mean temperature and rain-fall in each, for the month of June, 1870.

| States. | Date. | Maximum temperature. | Date. | Minimum temperature. | Average mean temperature. | Average rain-fall. |
|----------------------------|---------------------|----------------------|------------|----------------------|---------------------------|--------------------|
| | | ° | | ° | ° | In. |
| Maine | 5 | 97 | 10 | 47 | 68.2 | 2.95 |
| New Hampshire | 25 | 100 | 21 | 48 | 69.1 | 3.25 |
| Vermont | 25 | 96 | 20, 21, 22 | 50 | 71.4 | 3.99 |
| Massachusetts | 25 | 104 | 10, 11 | 48 | 70.4 | 4.56 |
| Connecticut | 24, 25 | 95 | 11 | 52 | 71.6 | 4.46 |
| New York | 28 | 102 | 22 | 44 | 72.7 | 2.96 |
| New Jersey | 19 | 100 | 11 | 55 | 74.3 | 3.52 |
| Pennsylvania | 26, 27 | 98 | 21 | 47 | 72.5 | 4.65 |
| Maryland | 28 | 96 | 12 | 55 | 73.7 | 6.60 |
| District of Columbia | 28 | 93 | 2 | 63 | 75 | 4.45 |
| Virginia | 28 | 102 | 11 | 51 | 73.4 | 5.44 |
| North Carolina | 27 | 103 | 10, 14 | 52 | 74.5 | 4.41 |
| South Carolina | 26 | 95 | 12 | 60 | 76.8 | 6.24 |
| Georgia | 27 | 96 | 10, 11 | 51 | 75.5 | 3.27 |
| Alabama | 27 | 96 | 13 | 59 | 76.7 | 6.19 |
| Florida | { 26, 27, 29, 30 | 98 | 10 | 65 | 79.9 | 6.94 |
| Texas | 5, 6, 15 | 100 | 9 | 64 | 81.0 | 2.71 |
| Mississippi | 28 | 103 | 12, 13 | 58 | 77.8 | 4.26 |
| Tennessee | 26, 27 | 94 | 11 | 53 | 71.8 | 9.19 |
| Kentucky | 24, 25 | 94 | 10 | 52 | 72.8 | 4.64 |
| Ohio | 26, 28 | 102 | 22 | 48 | 71.9 | 3.86 |
| Michigan | 25 | 106 | 9, 10 | 41 | 68.8 | 3.58 |
| Indiana | 24, 25 | 100 | 10 | 51 | 72.9 | 4.69 |
| Illinois | 28 | 105 | 12, 15 | 44 | 72.7 | 1.99 |
| Wisconsin | 23 | 104 | 11 | 40 | 70.5 | 2.18 |
| Minnesota | 26 | 100 | 7, 8 | 44 | 72.1 | 0.97 |
| Iowa | 30 | 103 | 9 | 35 | 71.9 | 1.07 |
| Missouri | 28 | 100 | 9, 11 | 51 | 74.0 | 2.22 |
| Kansas | 30 | 106 | 12 | 52 | 74.3 | 1.98 |
| Nebraska | 29 | 101 | 9 | 47 | 73.7 | 1.50 |
| California | 6 | 95 | 2, 18 | 44 | 68.0 | 0.61 |

NOTES OF THE WEATHER, JUNE, 1870.

Orono, Me.—Aurora 18th; damaging thunder-storm 20th.

Surrey, Me.—Two thunder-storms, one with hail, 20th.

West Waterville, Me.—Haying 26th—in 1869, July 6. Mean heat 3.79° higher than the June average of six years; moisture 2.03 inches less.

Gardiner, Me.—Auroras 16th, 18th; severe hail 20th. Month dry, and mean heat 2.04° above June average of thirty-four years; moisture 1.5 inch less.

Lisbon, Me.—Refreshing rains 7th to 12th; strawberries 15th; haying 28th; rain needed 30th.

Norway, Me.—Hottest and driest June I ever knew.

Cornish, Me.—Fireflies 1st; strawberries 3d; raspberries 22d.

Cornishville, Me.—Showers, much thunder, 20th. June average of forty years, 61° ; warmest, 1831, 69° ; this, 71° .

Whitefield, N. H.—Rain on eighteen days, but ground dry till 30th.

Tamworth, N. H.—Fireflies 2d; aurora 3d; ripe strawberries 14th; drought 30th.

Goffstown, N. H.—A moist, hot month; rain on twelve days.

Lunenburg, Vt.—Ripe strawberries 15th; raspberries 28th; hail 18th, 20th. June dry, but crops forward and looking well.

Stratford, Vt.—June dry, and warmest in twelve years.

North Craftsbury, Vt.—Severe thunder-storm, hail ten miles south, 20th; slight frost in places 21st. Warmest June in many years.

Newport, Vt.—Auroras 3d, 14th, 24th; thunder-showers on ten days.

East Bethel, Vt.—Fireflies 4th; refreshing rains 6th, 7th; corn tassels 20th. Thermometer above 80° on twenty-one days, and 90° and above on ten days.

Woodstock, Vt.—Thunder-storms 20th, 27th. June warm, but not dry.

West Charlotte, Vt.—Auroras 3d, 19th, 26th; first thunder-shower of the season (and first rain since May 17) 6th. Season two weeks early.

Panton, Vt.—Ripe strawberries 11th; raspberries 29th; thunder-showers, hail, 20th.

Castleton, Vt.—Ripe strawberries 5th; showers, with hail, 20th.

Milton, Mass.—Thunder-storm of twelve hours, extending over New England, 20th. Last quarter of June very warm.

Cambridge, Mass.—Severe thunder-storm, with torrents of rain, 20th. (It was severer, and with hail, in Boston and vicinity.)

North Billerica, Mass.—Ripe strawberries 18th. Much lightning and thunder in June; vegetation rank; streams full.

New Bedford, Mass.—Althea blossoms 6th, locust 16th, tulip poplar 18th, chestnut 30th; severe and protracted thunder-storm 20th.

Lunenburg, Mass.—Warmest June on record; mean 71.01° ; in 1865, 70.29° ; in 1869, 65.71° . Average for thirty-one years, 66.24° .

Amherst, Mass.—Warmest June on college record—thirty-five years.

Richmond, Mass.—Violent thunder-storms, with hail, 17th, 20th, and 30th. Month hot, sultry, with frequent thunder-showers.

Hinsdale, Mass.—Heavy thunder storm, large damaging hail, 20th.

Newport, R. I.—Dense fogs till 20th. Season two weeks earlier than last year.

Columbia, Conn.—Terrific thunder and hail storm 20th; fearful and damaging gale 27th.

Brookfield, Conn.—Severe storm (hail) 20th; further north hail very severe. Last of June was hot and very dry.

Moriches, N. Y.—Incessant lightning NNE. and NW. (no rain) 20th.

Hartford, N. Y.—June unusually dry; much distant thunder.

Garrison's, N. Y.—Heavy thunder-storm 20th. Last of month very warm.

New York City.—Aurora 18th; meteors 18th, 25th, 30th; heavy thunder-storms 20th, 27th.

Newburg, N. Y.—Thermometer 90° oftener than in any June for years.

Cooperstown, N. Y.—Brilliant aurora 18th; warmest June in twenty years.

North Hammond, N. Y.—Aurora 18th. Except 1st and 30th, very hot, and crops injured by drought—the severest ever known at this season.

Cazenovia, N. Y.—Aurora 6th; thunder-storms 9th, 20th.

Depauville, N. Y.—Copious thunder-shower 9th; auroras 15th, 16th, 18th, 19th, 26th, 27th. Driest May and June in thirty-nine years. June 5.3° warmer than June average of six years; and 11.4° warmer than in 1869.

North Volney, N. Y.—Fireflies 2d; auroras 16th, 17th, 18th, 19th. Very dry.

Newark Valley, N. Y.—Hail 17th, and one mile north 20th.

Himrods, N. Y.—Severe thunder-storm, settled rain, 9th; aurora 18th; very heavy thunder-storm, with hail, in Penn Yan 27th. Warmest June since 1865.

Buffalo, N. Y.—Ripe strawberries 8th; destructive thunder and hail storm 11th; grapes blossomed 15th; cherries abundant after 20th.

Newark, N. J.—Fireflies 19th; severe thunder and lightning, little rain, 20th. Average mean temperature of twenty-six Junes, 66.997° : highest, 1865, 71.72° ; lowest, 1843, 60.25° ; this, 72.345° , with rain above average.

New Germantown, N. J.—Aurora 18th; heavy thunder-storm, hail, 20th.

Greenwich, N. J.—Damp affects wheat 11th; haying 17th to 24th, without rain; wheat cut 27th; locusts heard 30th.

Vineland, N. J.—Wet and damp till 16th; dry and drought till 29th.

Hamilton, Pa.—Heavy thunder-storm 17th; aurora 18th.

Dyberry, Pa.—Streams full 13th; low 30th. Hot and dry.

Fallsington, Pa.—Rain, damp, fog to 17th. Warmest June since 1858.

Horsham, Pa.—To 15th cool and damp; 19th to 29th good harvest weather.

Plymouth Meeting, Pa.—Daily rains from May 27th to June 8, and on seventeen days in June, yet latter half of June was dry; east winds on seventeen mornings ending 11th; hay cut 20th, wheat 30th. Month 3.7° above June average of six years.

White Hall, Pa.—Heavy and damaging thunder and hail storm 20th.

Reading, Pa.—Thunder-storms, with hail, 20th, with gale 27th.

West Chester, Pa.—Haying began 20th, (heavy grass:) oats heading 21st.

Ephrata, Pa.—Rain, mist, fog to 8th; warm; many showers to close.

Carlisle, Pa.—Haying, first rainless day since May 22d, 17th; wheat cut on slate lands 27th.

Tioga, Pa.—Last copious rain 11th; hot and dry since.

Grampian Hills, Pa.—Clover cut 22d; oats heading 27th; dry 20th to 26th.

Beaver, Pa.—Scarcely a fair day till 17th, and latter part wet.

Emmitsburg, Md.—Many showers early in June; later, dry and warm.

- Hampton, Va.*—After 15th very fine; last week very hot.
- Surry C. H., Va.*—Locust heard 20th; getting dry 30th. June fair, calm, and very hot 24th to 30th; rain on thirteen days.
- Piedmont, Va.*—Fireflies 2d; harvest 24th; wheat scabby.
- Lynchburg, Va.*—To 13th, five inches rain; after, half an inch.
- Snowville, Va.*—Thunder and hail storms 2d, 7th; wheat cut 20th.
- Wytheville, Va.*—Growing month; rain on twenty days; crops good.
- Goldsboro, N. C.*—Neuse River freshet destroyed much cotton 26th; cotton blooms 27th. Thermometer 100° and above on five days ending 30th.
- Gowdeysville, S. C.*—Early wheat cut 2d; clear and dry 29th to close.
- Bluffton, S. C.*—Quite rainy, and cotton not in bloom till 20th.
- Berne, Ga.*—First copious rain since April 1st, 12th; terrific thunder storm, with a southwest gale, 20th.
- Pilatka, Fla.*—Destructive thunder-storm and gale, with hail larger than hens' eggs, 6th; from 22d to close, dry, hot, and sultry.
- Ocala, Fla.*—Refreshing rains on 5th to 20th saved crops: severest thunder-storm, with wind and hail, ever known here 29th.
- Chattahoochie, Fla.*—Last of June rainy and much heavy thunder.
- Oakland, Tex.*—Rains have benefited corn, but injured cotton.
- Lavaca, Tex.*—Watermelons 16th. Driest June since 1858; cracks in the baked soil three to four feet deep.
- Austin, Tex.*—Unusually moist air and many showers in June.
- Cheneyville, La.*—Heavy thunder-storm, with hail and gale, 11th.
- Columbus, Miss.*—Cotton blooms 18th; wheat harvested; average crop.
- Enterprise, Miss.*—Katydids 27th. Rains heavy but local.
- Brookhaven, Miss.*—May unusually dry; little thunder in June. Blackberries, 2d; katydids, 21st; no night rains; little wind; hot and dry; vegetation needs rain.
- Elizabethton, Tenn.*—Severest rain and hail storm known here 26th; entire month cloudy, with immense rainfall and floods.
- Clarksville, Tenn.*—Thunder-shower, hail, 23d; a moist month.
- Trenton, Tenn.*—Hail half an inch deep, 10th; some cotton fields ruined.
- Pine Grove, Ky.*—Thunder-storm, hail, 15th; rain on sixteen days, light.
- Shelby City, Ky.*—Showers, with hail, 8th, 10th; excessive rains to 14th, lodging grain and grass.
- Wooster, Ohio.*—More rainy days than in any June for many years.
- Kelley's Island, Ohio.*—Black locust blossoms, 1st; Isabella grape, 11th; Catawba, 17th. Month 4.57° warmer than the June average of eleven years.
- Sandusky, Ohio.*—Isabella and Catawba grapes blossom 9th.
- Westerville, Ohio.*—Thunder-shower ends a long drought 7th.
- North Bass Island, Ohio.*—Catawba grapes blossom 10th, 17th.
- Toledo, Ohio.*—Highest heat ever known here in June.
- Kenton, Ohio.*—Three thunder-storms united here, with high winds, doing much damage, 28th. A very hot month.
- Urbana, Ohio.*—Wheat harvest began 24th. The month not one degree above the June average of eighteen years.
- Bethel, Ohio.*—Great rain, thunder, 9th; thunder shower, hail, 11th.
- Jacksonburg, Ohio.*—Fall barley cut 3d to 10th; winter wheat 22d to 30th.
- Cincinnati, Ohio.*—Thunder, heavy shower, some hail, 13th; thunder shower, two inches of rain fell in twenty to thirty minutes, 29th.

Detroit, Mich.—Heavy thunder-shower and gale, 28th.

Grand Rapids, Mich.—June 8° warmer than last year, and 3° higher than in 1868; the hottest June remembered here.

Ontonagon, Mich.—To 24th driest June in many years; crops suffered much, but rain of 24th, 25th will refresh late crops.

Veray, Ind.—Catalpa blossoms 6th; aïlanthus 13th; barley cut 13th; wheat 23d; hay 27th; terrific thunder and lightning, copious rain, 29th.

Knightstown, Ind.—To 15th showery; to 25th very dry; rain 26th.

Rensselaer, Ind.—Last week very hot, with some heavy showers.

Marengo, Ill.—Drought of forty-three days relieved by heavy showers 9th.

Aurora, Ill.—Aurora, 20th; thunder shower, hail, 25th; drought severe; Fox River lower than in twenty-three years or more.

Belvidere, Ill.—Beautiful aurora 15th; great heat and drought; rainfall from April 1st to June 30th, 2.33 inches; for same period in 1869, 16.90 inches.

Ottawa, Ill.—Severe thunder-storm 29th, 30th—killed one person; thermometer above 100° on six days.

Winnebago, Ill.—Brilliant aurora 17th; rains have been local for three or four months, unequally distributed; some sections had but little.

Wyandot, Ill.—Much hazy air; last week the hottest in twenty-five years.

Hennepin, Ill.—April and May were dry and warm, but June excels; in forty-two years only one June reached 96°; this June reached 100° on five days.—(S.) Thermometer 100° and upward on seven days.—(O.)

Dubois, Ill.—Hail 9th, 12th; month 2.40° above average of six years.

Hingham, Wis.—Clover blossoms 1st; barley heading 12th; spring wheat 20th.

Rocky Run, Wis.—Last eight days warmest known here; crops failing.

Baraboo, Wis.—Thermometer 100° and more on the last seven days.

Minneapolis, Minn.—Green peas 1st; haying 23d; hottest June since 1858.

New Ulm, Minn.—Aurora, 20th; last of month very hot.

Clinton, Iowa.—Thunder-storm, hail, 4th; drought; last fortnight the warmest in seven years.

Waukon, Iowa.—Faint auroras, 18th, 19th; heat and drought.

Fort Madison, Iowa.—Dry season and dry month; since 1848 only once (June 19, 1854) did June reach 100° till now.

Iowa City, Iowa.—Average June heat for thirty years 67.92°; this, 71.81°.

Waterloo, Iowa.—Slight frost 8th; great heat and drought 30th.

Algona, Iowa.—Hottest June ever known in this county.

Woodbine, Iowa.—Hail 2d, with thunder-shower 5th; drought 30th.

West Union, Iowa.—Thunder-storm, hail, wind 5th; aurora 15th.

Hematite, Mo.—Driest June in many years; crops failing.

Oregon, Mo.—Auroras 17th, 18th, 20th, 23d, 24th, 30th.

Lawrence, Kas.—Very comfortable to 19th; since, 90° and above daily.

Council Grove, Kas.—Greatest heat in June in nine years.

Bellevue, Neb.—Hail, ground white, 4th, slight 5th. Month 4.6° warmer than in 1869.

New Castle, Neb.—No rain for four weeks; crops suffering.

Coalville, Utah.—Grasshoppers eating up all vegetation to 10th, then filling the air in clouds to 24th. It is said that along Salt Lake there is a windrow of them three or four rods wide and three to four feet deep.

MONTHLY REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR

AUGUST AND SEPTEMBER



1870.



WASHINGTON.
GOVERNMENT PRINTING OFFICE.
1870.



MONTHLY REPORT.



DEPARTMENT OF AGRICULTURE,

STATISTICAL DIVISION,

Washington, September 15, 1870.

SIR: I herewith present for publication a report upon the condition of the crops for August and September, with notes from statistical reporters thereon, together with extracts from the correspondence of the Department, address of the Commissioner before the Montgomery County (Maryland) Agricultural Society, and articles on the Southern Agricultural Congress, the Cotton Crop of 1869, Ixtle Fiber, Wheat Culture in South Carolina, Cheese Production, Cotton and Tobacco in Louisiana, Beet-Sugar Factories in California, Canal from the Mississippi River to Lake Borgne, New Fertilizer, Home-made Fertilizers, Frauds in Fertilizers, Market Prices of Farm Products, Crop in England, the Cotton Season of 1869-'70 in India, &c.

J. R. DODGE,

Statistician.

Hon. HORACE CAPRON,

Commissioner.

CONDITION OF THE CROPS.

CORN.

This crop has been injured somewhat in localities by the drought, by wet weather, by the heat, by worms, and by early frost, but not sufficiently as yet to threaten a material reduction of the aggregate product heretofore anticipated. The great corn-producing State of Illinois reports the condition of the crop September 1 at 15 per cent. above an average. Missouri, ranking next to Illinois last year in corn production, reports the condition 6 per cent. above average; Indiana claims 25 per cent. above; Ohio, 10 per cent.; Kentucky, 10 per cent.; Tennessee, 20 per cent.; Pennsylvania, 5, and New York, 10 per cent.; Michigan and Wisconsin, 15 per cent.; Minnesota, 10 per cent.; North Carolina, 10 per cent.; South Carolina, 13 per cent.; Georgia, 14, Florida, 15, and Alabama, 7 per cent.; Louisiana, 12, Texas, 4, and Arkansas, 14 per cent.; West Virginia, 16 per cent. Of the New England States, Maine and Vermont report the condition above an average; the former 5 per cent. and the latter 15. New Jersey shows 10 per cent. above an average, while Virginia and Iowa report the promise a full average. The States showing a condition below an average are, New Hampshire, 12 per cent.; Massachusetts, 15; Rhode Island, 9; Connecticut, 20; Delaware and Maryland, 10; Mississippi, 2; Kansas, 12; Nebraska, 5; California, 4, and Oregon, 5 per cent. The crop is one to three weeks in advance, and without early severe frost promises to escape serious injury from that source.

COTTON.

There is considerable complaint of damage to the cotton crop from rust, the worms, and unfavorable August weather, but the general prospect is not discouraging. The average of reports from North Carolina shows the condition 5 per cent. better than at same date last year; but there are reports of injury by rust, and of bolls falling off, caused by wet weather. South Carolina, 5 per cent. above, but rust prevalent, and the yield diminished by intensely hot and dry weather. Georgia, 5 per cent. above, with the rust and the worms deteriorating the crop to some extent. Rust and dry weather have done considerable damage on the gray lands fertilized with guano. In Florida the condition is 15 per cent. above last year. In Alabama the rust, the drought, and the boll-worm have wrought serious damage, while in some localities rain has induced rot and extensive shedding of young bolls; an average of reports, however, shows the general prospect in the State to be as good as at the same date last year. Mississippi also reports an average condition, though complaints are numerous of the depredations of the boll-worm and of the shedding of bolls from frequent rains. Louisiana 8 per cent. above average condition; the crop is later than usual, and the rains and the caterpillars have done some damage. Texas, 9 per cent. above, with increased acreage. Our Cameron County reporter says, "This valley produced 400 bales last season; will probably produce 2,000 bales this year." The worm has done much damage, and excessive rains have been disastrous in some localities. Arkansas promises 10 per cent. better than at this date last year, with few complaints of injury. The condition in Tennessee and Missouri is about an average, though several correspondents rate the crop considerably below that of last year, unless there should be a similarly favorable fall. There is little in the figures of our reporters to indicate a decreased yield of cotton, and favorable weather henceforth must insure considerable increase.

WHEAT.

Our returns upon this product pertain chiefly to the condition of the crop when harvested, though the figures indicate in a measure the extent of the yield as compared with an average. At the date of reports, however, the grain had not been thrashed out to any considerable extent, so that our October returns must be had before an estimate of the aggregate wheat production of the year can be made. On condition, when harvested, the States report as follows, (the figures 10 representing an average:) Maine, 10.1; New Hampshire, 9; Vermont, 9.6; Massachusetts, 10; Connecticut, 9.7; New York, 9.1; New Jersey, 8.1; Pennsylvania 9; Delaware, 7; Maryland, 8.2; Virginia, 9; North Carolina, 10.5; South Carolina, 9.5; Georgia, 11; Alabama, 11; Mississippi, 10; Texas, 9; Arkansas, 10.6; Tennessee, 9.8; West Virginia, 10; Kentucky, 9.6; Missouri, 9.3; Illinois, 10.1; Indiana, 9.5; Ohio, 9.5; Michigan, 9; Wisconsin, 10; Minnesota, 9.8; Iowa, 10.2; Kansas, 10; Nebraska, 9.5; California, 9.7; Oregon, 10.3. In New York the gathered crop has been injured by heavy rains. In New Jersey and Pennsylvania, complaints are heard of shrunken grain, in some cases "hardly worth thrashing." The "scab" proved a serious injury in Maryland and Virginia, caused by heavy rains previous to harvest. Some smut in North Carolina, and injury from wet weather in West Virginia. In Kentucky there was considerable rust in the low lands along the Ohio and Kentucky Rivers. Frequent rains have damaged the grain in the shock in Tennessee and Minnesota. The Michigan harvest was frequently in-

errupted by rain and some grain sprouted in the shock. In Kansas the crop was gathered in good condition, but was considerably damaged by damp weather in August. The quality of the grain thrashed is generally excellent, in many cases compensating for deficient quantity. Reports upon the quality and yield of grain will be found under head of "Notes on the Crops."

RYE, OATS, AND BARLEY.

These crops were generally harvested in good condition, with slight local drawbacks. There is an apparent diminution in the rye crop, and also in the barley product. Estimates of the yield of each will be given in our next report.

BUCKWHEAT.

Tennessee, Michigan, North Carolina, West Virginia, and Wisconsin are the only States which report the prospect for buckwheat above or up to an average; the Middle and Western States indicate a decline of 5 to 10 per cent.; New England, 15 to 20 per cent. The drought has blighted the crop in some localities.

POTATOES.

The drought in many sections, and destructive insects in others, especially in the West, have materially reduced the potato crop. North Carolina, Georgia, Arkansas, Tennessee, and Kentucky alone report the crop above an average—5 to 12 per cent. Connecticut, New Hampshire, Massachusetts, New Jersey, Missouri, Illinois, Indiana, Wisconsin, Minnesota, Iowa, Kansas, and Nebraska report a decline varying from 20 to 30 per cent. Maine, New York, Ohio, Michigan, 10 to 20 per cent.; and Vermont, Pennsylvania, Maryland, Virginia, South Carolina, Alabama, Texas, California, and Oregon, 5 to 10 per cent. decline. Sweet potatoes promise a fair general yield, though Delaware, Maryland, and Virginia show a decline of 10 per cent. in prospect of yield, with a falling off in several of the Western States. New Jersey, South Carolina, Georgia, Florida, Texas, Arkansas, Tennessee, West Virginia, and Kentucky promise a slight increase.

HAY.

The product of hay appears to be about 15 per cent. short of last year's crop in New England; 20 per cent. in New York; 15 to 20 per cent. short in Illinois, Missouri, Indiana, Ohio, Wisconsin, Iowa, and Nebraska; and 5 to 10 per cent. in Pennsylvania, Delaware, Michigan, Minnesota, and Kansas. An increase of 5 to 12 per cent. is reported in New Jersey, Maryland, Virginia, North Carolina, South Carolina, Georgia, Arkansas, Tennessee, West Virginia, Kentucky, and California; and of 30 per cent. in Oregon. In most of the States the quality of the crop is above average.

SORGHUM AND SUGAR CANE.

Sorghum seems to have been almost entirely neglected east of Pennsylvania. The crop in most of the Western States is reported in fair condition; above average in Tennessee, West Virginia, Kentucky, Illinois, Indiana, and Minnesota; also in Pennsylvania, North Carolina, South Carolina, Georgia, and Texas, in some of which latter States increased interest is being shown in this really valuable product. Louisiana and Florida report the sugar crop 5 to 10 per cent. above average;

Texas, Mississippi, Alabama, and Georgia report from an average to 10 per cent. below.

HOPS.

California is the only State that reports increased acreage in this product. Ohio claims an undiminished acreage, but all the other hop-growing regions show a decline of 5 to 15 per cent.—Wisconsin, 10; Michigan, 15. The condition at date of reporting was generally 5 to 15 per cent. below an average.

TOBACCO.

This crop is reported 14 per cent. below average in Connecticut, 7 below in Massachusetts, 10 in Maryland, 17 in Mississippi, 4 in Texas; and 2 above in New York, 5 in Pennsylvania, 4 in Virginia, 14 in North Carolina, 10 in South Carolina, 13 in Georgia, 10 in Arkansas, 9 in Tennessee, 5 in West Virginia, 6 in Kentucky, 3 in Indiana, 2 in Ohio; and an average in Missouri, Illinois, and Michigan.

FRUITS.

Though there is much complaint of apples falling during the last two months, and of retarded growth caused by the dry weather, a fair product is promised in the Eastern and Middle States generally, and in Virginia, North Carolina, South Carolina, Tennessee, and Kentucky, with from six to nine-tenths of an average crop in the Western States. Peaches have been about three-fourths of a crop in Delaware; an average crop in New Jersey; from 10 to 20 per cent. below an average in New York, Pennsylvania, and Maryland; Virginia, North Carolina, South Carolina, and Florida; three-fourths of a crop in Michigan, and in the West, generally, half to two-thirds of an average yield. Grapes promise an abundant yield almost everywhere, and the general product must be very large. Delaware, North Carolina, Georgia, Alabama, Mississippi, Texas, Arkansas, and Tennessee report less than an average crop; the other States report variously from average up to 25 per cent. above.

WOOL.

A slightly increased weight of fleece as compared with an average yield of wool is reported in New Hampshire, Massachusetts, Maryland, Arkansas, Minnesota, and Oregon; and an average weight in Virginia, Kansas, and California. Other States report a decline ranging from 2 to 10 per cent. A small general decline is probable.

STOCK HOGS.

There is a decrease reported in the number of fattening hogs, as follows: New Hampshire, Massachusetts, Rhode Island, Georgia, Florida, Alabama, Louisiana, Arkansas, Illinois, from 2 to 5 per cent.; in Indiana, Texas, and Oregon, 5 to 10 per cent.; and an increase of from 2 to 5 per cent. in Maine, Vermont, New York, New Jersey, Pennsylvania, Virginia, North Carolina, South Carolina, Tennessee, West Virginia, Kentucky, Ohio, Michigan, Wisconsin, Minnesota, Iowa, and California; and 5 to 10 per cent. in Missouri, Kansas, and Nebraska. The condition as to size and weight generally compares favorably with that of former years, except in several of the Southern States and in Illinois, Indiana, New Hampshire, Massachusetts, Connecticut, and Oregon, which indicate depreciation in this regard.

Table showing the condition of the crops on the 1st day of August, 1870.

| STATES. | CORN. | | SPRING WHEAT. | | SPRING RYE. | | OATS. | | BARLEY. | BUCKWHEAT. | POTATOES, (Solanum tuberosum.) | | POTATOES, (Solanum edulis, sweet.) | | TOBACCO. | | HAY. | |
|---------------------|--------------------|---------|--------------------|---------|--------------------|---------|--------------------|---------|--------------------|------------|--------------------------------|---------|------------------------------------|---------|--------------------|---------|--------------------|---------|
| | Average condition. | Aug. 1. | Average condition. | Aug. 1. | Average condition. | Aug. 1. | Average condition. | Aug. 1. | Average condition. | Aug. 1. | Average condition. | Aug. 1. | Average condition. | Aug. 1. | Average condition. | Aug. 1. | Average condition. | Aug. 1. |
| Maine..... | 10 | 9.5 | 9.5 | 9.5 | 9.4 | 9.4 | 9.5 | 9.4 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| New Hampshire..... | 10 | 10.2 | 10.1 | 10 | 9.7 | 9.7 | 10 | 9.7 | 9.7 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| Vermont..... | 10.5 | 9.2 | 9.4 | 8.5 | 9.7 | 9.7 | 8.5 | 9.7 | 9.7 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| Massachusetts..... | 10.1 | 9.2 | 10 | 10.1 | 9.5 | 9.5 | 10.1 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| Rhode Island..... | 10.5 | 9.6 | 9 | 9.6 | 9 | 9 | 9.6 | 9 | 9 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 |
| Connecticut..... | 10.5 | 9.7 | 8.5 | 9.7 | 8.5 | 8.5 | 9.7 | 10 | 10 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 |
| New York..... | 10.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.4 | 8.4 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 |
| New Jersey..... | 10.7 | 9.6 | 9.6 | 10.4 | 10.4 | 9.7 | 10.4 | 9.7 | 9.7 | 9.9 | 10.3 | 10.3 | 10.3 | 10.3 | 9.7 | 10.1 | 10.1 | 10.1 |
| Pennsylvania..... | 10.6 | 9.6 | 9.6 | 10.4 | 10.4 | 9.7 | 10.4 | 9.7 | 9.7 | 9.9 | 10.3 | 10.3 | 10.3 | 10.3 | 9.7 | 10.1 | 10.1 | 10.1 |
| Delaware..... | 10 | 9.6 | 9.6 | 10 | 10 | 9.7 | 10 | 9.7 | 9.7 | 9.9 | 10.3 | 10.3 | 10.3 | 10.3 | 9.7 | 10.1 | 10.1 | 10.1 |
| Maryland..... | 10.2 | 9.6 | 9.6 | 11 | 11 | 9.7 | 11 | 9.7 | 9.7 | 9.9 | 10.3 | 10.3 | 10.3 | 10.3 | 9.7 | 10.1 | 10.1 | 10.1 |
| Virginia..... | 10.7 | 9.6 | 9.6 | 11 | 11 | 9.7 | 11 | 9.7 | 9.7 | 9.9 | 10.3 | 10.3 | 10.3 | 10.3 | 9.7 | 10.1 | 10.1 | 10.1 |
| North Carolina..... | 10.5 | 9.6 | 9.6 | 10.8 | 10.8 | 9.7 | 10.8 | 9.7 | 9.7 | 9.9 | 10.3 | 10.3 | 10.3 | 10.3 | 9.7 | 10.1 | 10.1 | 10.1 |
| South Carolina..... | 10.7 | 9.6 | 9.6 | 9.5 | 9.5 | 10 | 9.5 | 10 | 10 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| Georgia..... | 10.7 | 9.6 | 9.6 | 9.9 | 9.9 | 10.1 | 9.9 | 10.1 | 10.1 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| Florida..... | 10.5 | 9.6 | 9.6 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| Alabama..... | 10.6 | 9.6 | 9.6 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| Mississippi..... | 9.6 | 9.6 | 9.6 | 10.6 | 10.6 | 9.7 | 10.6 | 9.7 | 9.7 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| Louisiana..... | 10.2 | 9.6 | 9.6 | 7 | 7 | 8.4 | 7 | 8.4 | 8.4 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| Texas..... | 10 | 9.6 | 9.6 | 10.1 | 10.1 | 9.6 | 10.1 | 9.6 | 9.6 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| Arkansas..... | 11 | 9.6 | 9.6 | 10.9 | 10.9 | 9.6 | 10.9 | 9.6 | 9.6 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| Tennessee..... | 10.7 | 9.6 | 9.6 | 10.6 | 10.6 | 9.3 | 10.6 | 9.3 | 9.3 | 9.8 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 |
| West Virginia..... | 11.4 | 9.6 | 9.6 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 9.4 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 |
| Kentucky..... | 11 | 9.6 | 9.6 | 10.2 | 10.2 | 9.2 | 10.2 | 9.2 | 9.2 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 |
| Missouri..... | 9.6 | 8.9 | 8.9 | 8.2 | 8.2 | 9.1 | 8.2 | 8.6 | 8.6 | 9.6 | 9.6 | 9.6 | 9.6 | 9.6 | 9.6 | 9.6 | 9.6 | 9.6 |
| Illinois..... | 10.6 | 8.6 | 8.6 | 9.1 | 9.1 | 9.6 | 9.1 | 9 | 9 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 |
| Indiana..... | 11.2 | 8.7 | 8.7 | 9.7 | 9.7 | 9.5 | 9.7 | 9.5 | 9.5 | 10 | 10 | 10 | 10 | 10 | 9.7 | 9.7 | 9.7 | 9.7 |
| Ohio..... | 11 | 8.7 | 8.7 | 9.7 | 9.7 | 9.5 | 9.7 | 9.5 | 9.5 | 10 | 10 | 10 | 10 | 10 | 9.7 | 9.7 | 9.7 | 9.7 |
| Michigan..... | 11.2 | 9.9 | 9.9 | 10.5 | 10.5 | 10 | 10.5 | 10 | 10 | 9.8 | 10.3 | 10.3 | 10.3 | 10.3 | 9.1 | 9.1 | 9.1 | 9.1 |
| Wisconsin..... | 11 | 8.3 | 8.3 | 7.8 | 7.8 | 8.4 | 7.8 | 8.4 | 8.4 | 10.3 | 9.9 | 9.9 | 9.9 | 9.9 | 9.1 | 9.1 | 9.1 | 9.1 |
| Minnesota..... | 10.8 | 9.5 | 9.5 | 9.4 | 9.4 | 9.2 | 9.4 | 9.2 | 9.2 | 9.5 | 8.2 | 8.2 | 8.2 | 8.2 | 8.4 | 8.4 | 8.4 | 8.4 |
| Iowa..... | 9.5 | 9.5 | 9.5 | 8.9 | 8.9 | 9.9 | 8.9 | 9.9 | 9.9 | 9.4 | 7.8 | 7.8 | 7.8 | 7.8 | 9 | 9 | 9 | 9 |
| Nebraska..... | 8 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.4 | 7.9 | 7.9 | 7.9 | 7.9 | 9.3 | 9.3 | 9.3 | 9.3 |
| Kansas..... | 8.6 | 9.2 | 9.2 | 9 | 9 | 10.7 | 9 | 10.7 | 10.7 | 10.1 | 9 | 9 | 9 | 9 | 10 | 10 | 10 | 10 |
| Nebraska..... | 8.6 | 9.2 | 9.2 | 9 | 9 | 10.7 | 9 | 10.7 | 10.7 | 10.1 | 9 | 9 | 9 | 9 | 10 | 10 | 10 | 10 |
| California..... | 10.1 | 8.5 | 8.5 | 9.6 | 9.6 | 9.9 | 9.6 | 9.9 | 9.9 | 10.1 | 10.2 | 10.2 | 10.2 | 10.2 | 9.5 | 9.5 | 9.5 | 9.5 |
| Oregon..... | 10.7 | 10.9 | 10.9 | 11.3 | 11.3 | 10.8 | 11.3 | 10.8 | 10.8 | 11.2 | 10.4 | 10.4 | 10.4 | 10.4 | 9.5 | 9.5 | 9.5 | 9.5 |

Table showing the condition of the crops, &c.—Continued.

| STATES. | WAX. | | PASTURES. | BEANS. | COTTON. | SORGHUM. | SUGAR CANE. (Not sor- ghum.) | APPLES. | PEACHES. | GRAPES. | CHAM- BERLINS. |
|---------------------|--|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|------------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| | Product of clo- ver compared with last year. | Average con- dition of clo- ver when har- vested. | Average con- dition Aug. 1. | Average con- dition Aug. 1. | Average con- dition Aug. 1. | Average con- dition Aug. 1. | Average con- dition Aug. 1. | Average con- dition Aug. 1. | Average con- dition Aug. 1. | Average con- dition Aug. 1. | Average con- dition Aug. 1. |
| Maine..... | 7.4 | 10.3 | 7.7 | 9.6 | | | | 11 | 10 | 9.5 | 9 |
| New Hampshire..... | 7.2 | 10.4 | 9.5 | 9.5 | | | | 10.5 | 10 | 10.4 | 10 |
| Vermont..... | 7.2 | 10.4 | 10 | 9.4 | | | | 10.5 | 11 | 10.4 | 9.5 |
| Massachusetts..... | 9.5 | 9.2 | 7.2 | 9.4 | | | | 11 | 10 | 10.2 | 10 |
| Rhode Island..... | 10 | 9.6 | 6.6 | 9.4 | | | | 10.6 | 10 | 10.3 | 10 |
| Connecticut..... | 7.7 | 9.2 | 9.2 | 9 | | | | 11 | 9.2 | 10.2 | 9.8 |
| New York..... | 7.4 | 9.2 | 7.7 | 9.6 | | | | 10 | 9.2 | 10.2 | 9.8 |
| New Jersey..... | 10.5 | 10.7 | 9.2 | 9.2 | | | | 11.5 | 11 | 11.3 | 10 |
| Pennsylvania..... | 10 | 9.9 | 10.4 | 9.9 | | | | 10.2 | 9.5 | 10.2 | 9.5 |
| Delaware..... | 10 | 11 | 9 | 11 | | | | 13 | 9.2 | 9 | |
| Maryland..... | 10.7 | 10.5 | 9.9 | 9.2 | | | | 9.9 | 9.2 | 9.6 | |
| Virginia..... | 10.5 | 10.2 | 11 | 10.3 | 10.4 | 8.3 | | 10.3 | 9.5 | 10.3 | |
| North Carolina..... | 11.2 | 10.4 | 11.1 | 10.5 | 10.4 | 10.3 | | 11.5 | 11 | 9.6 | |
| South Carolina..... | 10 | 8 | 10.6 | 10.4 | 10.4 | 9.2 | | 10.6 | 7.3 | 10.8 | |
| Georgia..... | 11 | 10.9 | 10.8 | 10.4 | 11 | 11 | 10.3 | 10.5 | 9.7 | 9.2 | |
| Florida..... | | | 9.5 | 10.6 | 11 | | 10 | 10.5 | 9.7 | 9.2 | |
| Alabama..... | | | 9.9 | 9.5 | 10.2 | | 10.2 | 9.5 | 3 | 9 | |
| Mississippi..... | 9.5 | | 10.5 | 9.3 | 9.5 | | 10 | 9.7 | 3 | 9.7 | |
| Louisiana..... | | | 9.2 | 9.6 | 10 | | 11.1 | 9.3 | 5.5 | 11.3 | |
| Texas..... | | | 9.6 | 9.5 | 9.7 | | 10.1 | 7.5 | 4 | 8.2 | |
| Arkansas..... | 10.6 | 10.6 | 10.8 | 10.6 | 11 | 10.2 | | 7.5 | 4 | 6.7 | |
| Tennessee..... | 10.9 | 9.7 | 11.6 | 10.1 | 9 | 10.3 | | 10 | 7.3 | 9.6 | |
| West Virginia..... | 10.7 | 10.6 | 10.8 | 10.3 | | | | 7.6 | 7 | 10 | |
| Kentucky..... | 10.4 | 10.4 | 11.1 | 10 | | 10 | | 10.1 | 7.9 | 10.5 | |
| Missouri..... | 7.7 | 8.7 | 6.7 | 7.1 | 7.4 | 7.6 | | 5.4 | 5.2 | 10.2 | |
| Illinois..... | 9.7 | 9.7 | 7.5 | 9 | 10.2 | 9.6 | | 5.4 | 9 | 10 | |
| Indiana..... | 9.7 | 9.9 | 9.3 | 10.6 | | 10.2 | | 6.2 | 7.5 | 10.1 | 9.2 |
| Ohio..... | 10.3 | 10 | 9.8 | 9.8 | | 9.7 | | 6.2 | 5.2 | 10.5 | |
| Michigan..... | 9.9 | 9.6 | 10.7 | 10.1 | | 10.9 | | 9.2 | 2.3 | 9.3 | 10.3 |
| Wisconsin..... | 10.2 | 9.7 | 9.4 | 10 | | 10 | | 8.4 | | 10.3 | 10.6 |
| Minnesota..... | 10.3 | 9.6 | 8.8 | 9.7 | | 10.1 | | 10.1 | 9.2 | 10.3 | 11.7 |
| Iowa..... | 7.3 | 9.2 | 7.3 | 7.5 | | 9.1 | | 7 | 6.2 | 9.3 | |
| Kansas..... | 9 | 10 | 7.7 | 7.2 | | 9.2 | | 7 | 6.2 | 7.3 | |
| Nebraska..... | 7.7 | 7.7 | 7.7 | 7.2 | | 9.2 | | 6.5 | 7 | 9 | |
| Nebraska..... | 10.7 | 11.2 | 9 | 10.1 | | 9.2 | | 2.2 | 7.3 | 10.5 | |
| California..... | 12.3 | 9.6 | 12.3 | 10.9 | | | | 7 | 7 | 10.4 | |

NOTES ON THE CROPS.

CORN.

- Piscataquis County, Me.*—Injured by frost.
- Hillsborough County, N. H.*—Injured severely by drought.
- Strafford County, N. H.*—A fair average crop of good quality.
- Rockingham County, N. H.*—Suffers materially from drought.
- Orleans County, Vt.*—More than an average crop.
- Berkshire County, Mass.*—A very excellent crop.
- Plymouth County, Mass.*—Many fields have been cut up for fodder.
- Wayne County, N. Y.*—A larger yield than ever before.
- Onondaga County, N. Y.*—Crop above the average.
- Otsego County, N. Y.*—The crop will be a fine one.
- Chautauqua County, N. Y.*—The finest crop for the last six years.
- Niagara County, N. Y.*—"The best crop I ever knew."
- Sussex County, N. J.*—A good crop, considering the drought.
- Hunterdon County, N. J.*—The crop damaged by the heat and drought of August.
- Lehigh County, Pa.*—In the northern part of the county, on the slate soil, corn has suffered a great deal from drought; in the southern part, and on the heavy limestone soils, the crop is good.
- Franklin County, Pa.*—If there are no early frosts there will be a good crop.
- Baltimore County, Md.*—An ordinary crop.
- Queen Anne County, Md.*—A full average crop.
- King George's County, Va.*—A crop about as large as that of last year.
- Fairfax County, Va.*—A fair average yield.
- Henry County, Va.*—The crop will be a full one.
- Northumberland County, Va.*—In consequence of the severe drought the crop will fall short about one-third.
- Nansemond County, Va.*—Suffering severely from drought.
- Norfolk County, Va.*—About one-fourth cut off by drought.
- Henrico County, Va.*—Probably less than half an average crop.
- Wythe County, Va.*—Never looked better.
- Surry County, Va.*—About half an average crop.
- Spotsylvania County, Va.*—Much better than last year's crop.
- Gloucester County, Va.*—Scarcely half an average.
- Amelia County, Va.*—A good crop.
- Greene County, Va.*—The crop will be exceedingly short.
- Alamance County, N. C.*—Twenty per cent. above the average.
- Edgecombe County, N. C.*—Twenty-five per cent. less than an average.
- Caldwell County, N. C.*—Much damaged by rains.
- Le Noir County, N. C.*—Fallen short about one-tenth since last report.
- Forsyth County, N. C.*—Prospect for a fine crop never better.
- Rockingham County, N. C.*—The best crop for many years.
- Davie County, N. C.*—In better condition than for years.
- Williamsburg County, S. C.*—Better crops than since 1864.
- Lexington County, S. C.*—The yield will more than double that of last year.
- Columbia County, S. C.*—Bids fair to be one of the largest crops ever raised in the county.
- Decatur County, Ga.*—Short crop; worth \$1 60 per bushel.
- Jackson County, Ga.*—An excellent crop.
- Taylor County, Ga.*—The yield per acre has not been better for many years.

- Heard County, Ga.*—One-third larger crop than last year.
- Liberty County, Ga.*—A fair crop.
- Towns County, Ga.*—Crop never better.
- Carroll County, Ga.*—The crop has never been equaled in the county.
- Oglethorpe County, Ga.*—Prospect of an unusually good crop.
- Chattooga County, Ga.*—An unusually good crop.
- Spalding County, Ga.*—In area and production largely in excess of last year's crop.
- Nassau County, Fla.*—An average crop.
- Randolph County, Ala.*—Five-tenths above an average crop, notwithstanding damages by smut.
- Conecuh County, Ala.*—A good crop.
- Monroe County, Miss.*—A better crop than that of last year.
- Claiborne County, Miss.*—A fair average yield.
- Newton County, Miss.*—A decrease of 10 per cent. in acreage. Average condition not good.
- Grenada County, Miss.*—The early planting was seriously injured before the season set in. Late planting very good.
- Washington Parish, La.*—The crop exceeds the highest expectations.
- Grimes County, Texas.*—The crop is three-tenths larger than last year.
- Harris County, Texas.*—Less land devoted to corn than last year.
- Kendall County, Texas.*—A good crop is secured.
- Columbia County, Ark.*—A good average crop, but the acreage smaller by two-tenths.
- Newton County, Ark.*—Injured considerably by the dry weather in July and August, yet the crop will be two-tenths better than last year.
- Clark County, Ark.*—An average crop.
- Smith County, Tenn.*—A large crop.
- Coffee County, Tenn.*—One of the best crops for many years.
- Giles County, Tenn.*—Never a finer prospect for an abundant crop.
- Monroe County, Tenn.*—An excellent crop.
- Humphreys County, Tenn.*—Better than for many years.
- Fayette County, Tenn.*—Late corn promises an abundant yield.
- Hawkins County, Tenn.*—Upland better than last year; that on river bottoms not so good, on account of abundant rains.
- Henry County, Tenn.*—A fine crop.
- Raleigh County, W. Va.*—An extraordinary corn season.
- Monongalia County, W. Va.*—Prospect of an average crop.
- Morgan County, W. Va.*—The season has been especially favorable for corn.
- Webster County, W. Va.*—An excellent crop.
- Preston County, W. Va.*—A bountiful crop.
- Mineral County, W. Va.*—Injured by grasshoppers.
- Tyler County, W. Va.*—Injured by dry weather while the ear was forming.
- Brooke County, W. Va.*—In excellent condition, and farmers are in expectation of at least two-tenths more than last year.
- Warren County, Ky.*—The largest crop ever grown in the county.
- Henry County, Ky.*—A successful crop.
- Owen County, Ky.*—There is prospect of only an average crop.
- Scott County, Ky.*—Not as heavy as was expected a month ago.
- Butler County, Ky.*—A large crop.
- Shelby County, Ky.*—Prospects flattering.
- Oldham County, Ky.*—Never better.
- Russell County, Ky.*—Better than it has been for ten years.
- Edmonson County, Ill.*—Appearance promising.

- Livingston County, Mo.*—An average crop.
- De Kalb County, Mo.*—A very large crop will be harvested if frost holds off twelve days.
- Holt County, Mo.*—Will have an average of 45 to 50 bushels per acre, of excellent quality, on deep-plowed land.
- Cass County, Mo.*—A good two-thirds crop.
- Macon County, Mo.*—Best crop in twenty years.
- Linn County, Mo.*—Late corn is doing well.
- Scott County, Mo.*—The best crop ever seen here.
- Lafayette County, Ill.*—The prospect is by far the best we ever had in this county. More than double the usual amount will be raised.
- Edwards County, Ill.*—Excellent.
- Stephenson County, Ill.*—Our crop is both forward and heavy.
- Schuyler County, Ill.*—A full average.
- McHenry County, Ill.*—Three weeks more forward than usual at this season, and nearly beyond the reach of frost.
- St. Clair County, Ill.*—Promises to be unusually good.
- Lawrence County, Ill.*—Unusually promising.
- Jackson County, Ill.*—A good crop.
- Kankakee County, Ill.*—Prospects never so promising.
- Boone County, Ill.*—Not more than an average yield.
- Brown County, Ill.*—The yield is enormous.
- Page County, Ill.*—The acreage is greater than ever, and the yield unusually large. The product will be double that of any year since 1860.
- Livingston County, Ill.*—Good.
- Grundy County, Ill.*—Drying up, and ripening twenty to thirty days earlier than usual.
- Clay County, Ill.*—The largest crop ever raised in the county.
- Winnebago County, Ill.*—The crop is very forward.
- Williamson County, Ill.*—Better than for several years.
- Jo Daviess County, Ill.*—An average crop.
- Hendricks County, Ind.*—The crop is almost without precedent.
- Cass County, Ind.*—Corn is out of the way of frost, and is the most abundant crop ever known.
- Blackford County, Ind.*—An unusually good crop.
- Kosciusko County, Ind.*—An unusually fine crop.
- Fountain County, Ind.*—A very heavy crop and ripening fast. The acreage is large.
- Floyd County, Ind.*—The crop has not been as good in twenty years.
- Ohio County, Ind.*—The August drought has reduced corn from an average to seven-tenths of an average.
- Benton County, Ind.*—The prospect is that the crop will be the heaviest ever known, notwithstanding some injury from drought in July.
- Jennings County, Ind.*—A very hot and dry summer has shortened the yield of corn as well as that of all other crops.
- Marion County, Ind.*—The prospect is excellent.
- Miami County, Ind.*—Drought is affecting late-planted corn.
- Jefferson County, Ind.*—A hundred per cent. better than usual.
- Athens County, Ohio.*—Corn suffered severely from drought in July and August, and the crop will be light.
- Meigs County, Ohio.*—The crop will be a short one.
- Williams County, Ohio.*—The crop is above an average, and at this date (August 26) is nearly ripe, the season being two weeks earlier than usual.
- Noble County, Ohio.*—Corn was never better.

Lake County, Ohio.—Corn is looking badly, owing to extremely wet weather.

Ashland County, Ohio.—Corn is an average crop, and, like most other crops this season, is nearly three weeks earlier than usual.

Hamilton County, Ohio.—The crop is suffering from want of rain.

Marion County, Ohio.—Injured by drought.

Crawford County, Ohio.—The crop is better than usual; much of it already ripe.

Mercer County, Ohio.—The best crop for many years.

Seneca County, Ohio.—A larger crop than ever before.

Erie County, Ohio.—The best crop ever grown here.

Montcalm County, Mich.—A very large crop.

Ionia County, Mich.—The crop is a very good one, with the exception that it is affected by smut.

Cass County, Mich.—The crop is being injured by drought.

Branch County, Mich.—The best crop ever known, and two weeks earlier than usual.

Cathoun County, Mich.—Corn is excellent, most of it ready to cut up.

Van Buren County, Mich.—Drought has been continuous since June 15, and corn, which had given excellent promise, is now drying on the cob.

Washtenaw County, Mich.—A splendid crop in quantity and quality. Much of it has been cut.

Walworth County, Wis.—The crop will be light. The harvest is earlier than usual.

Marquette County, Wis.—Late rains have materially assisted the corn crop, which now promises to be heavy.

Green Lake County, Wis.—Will be a good crop.

Dakota County, Minn.—The best year for corn we have ever had.

Fillmore County, Minn.—Promises a larger yield per acre than we have had for years.

Wright County, Minn.—Damage by frost August 12 and subsequent dates.

Houston County, Minn.—Corn will not make an average yield, but is sound.

Sac County, Iowa.—Many fields have been nearly ruined by the drought; others, cultivated more deeply and planted in good season, give nearly an average crop.

Lee County, Iowa.—The crop has been greatly improved by rains of August 2 and subsequent dates.

Muscatine County, Iowa.—Corn has improved rapidly within three weeks, and if frost holds off till quite late the crop will be better than that of last year.

Cedar County, Iowa.—A heavy rain, August 24, has greatly revived corn, and a large crop will be secured unless early frost prevents.

Cherokee County, Iowa.—Corn on new ground is almost an entire failure, and many are cutting it up for fodder. The driest season known for twelve years.

Appanoose County, Iowa.—The late rains have worked wonders with corn; the stand is good, and as the acreage is increased the prospect is that the product will be larger than in any previous year.

Page County, Iowa.—A heavy crop.

Doniphan County, Kans.—Late rains will bring the crop up to an average. Had it not been for the severe drought the crop would have been the heaviest ever reported here.

Cherokee County, Kans.—Corn is very wormy; the yield, about fifteen

bushels per acre, or one-third of an average. Thousands of acres will not average more than nine bushels per acre.

Leavenworth County, Kans.—The crop is excellent.

Osage County, Kans.—In consequence of late rains the prospect now is that the crop will be good.

Douglas County, Nebr.—Corn planted early and well worked has eared well and will give a good crop.

Otoe County, Nebr.—Corn will be about an average crop.

Jefferson County, Nebr.—There will be about seven-tenths of an average crop.

Lancaster County, Nebr.—The crop will be an average one.

Hall County, Nev.—The crop will fall short, on account of drought.

Douglas County, Oreg.—The crop has been injured by drought. In some localities whole fields are not worth gathering.

COTTON.

Nansemond County, Va.—There is promise of a fine crop.

Sampson County, N. C.—Never so large before, but the fruitage is not expected to be equal to the growth of the plant.

Anson County, N. C.—A good yield, unless damaged by rust.

Columbus County, N. C.—A material increase of acreage.

Franklin County, N. C.—The forms have fallen off badly on account of the wet weather.

Mecklenburg County, N. C.—A better crop than last year.

Greene County, N. C.—Scarcely two-thirds of an average crop.

Edgecombe County, N. C.—Twenty-five per cent. less than an average.

Duplin County, N. C.—Largely injured by rust.

Gaston County, N. C.—A good crop.

Williamsburg County, S. C.—Rust is prevailing to some extent.

Fairfield County, S. C.—Prospect greatly diminished by the intensely hot and dry weather.

Richland County, S. C.—A good average crop.

Marion County, S. C.—Rust more general than since 1848.

Union County, S. C.—August has been very unfavorable to the crop.

Abbeville County, S. C.—Prospect of a good average crop and more.

Decatur County, Ga.—Suffering from rust.

Columbia County, Ga.—Rust and the army worm have materially injured the crop, say three-tenths.

Warren County, Ga.—Crop will fall considerably below that of last year.

Macon County, Ga.—Rust and dry weather have done considerable damage on the gray lands that have been fertilized with guano. In other localities the condition of the crop is above an average.

Butts County, Ga.—Long spells of wet and dry weather have somewhat injured the crop.

Brooks County, Ga.—Much injured by rust. A larger acreage than last year.

Glynn County, Ga.—Acreage much reduced from last year.

Milton County, Ga.—Much above the average.

Taylor County, Ga.—Every crop more or less damaged by rust.

Heard County, Ga.—Over an average crop.

Liberty County, Ga.—A fair crop.

Colquitt County, Ga.—Above an average crop, on account of the increased quantity of guano used this year.

Talbot County, Ga.—Failing on account of drought and extreme heat.

Harris County, Ga.—About an average.

Sumter County, Ga.—A fair crop.

Schley County, Ga.—Failing fast, on account of rust and drought.

Scriven County, Ga.—The poorest prospect in many years.

Oglethorpe County, Ga.—Prospect for an unusually large crop, better than for many years.

Terrell County, Ga.—Guanoed cotton dead on account of excessive drought.

Hancock County, Ga.—Drought and rust have materially lessened the prospect of a good crop.

Liberty County, Fla.—The best crop ever made in the county.

Bradford County, Fla.—The yield bids fair to be good.

Leon County, Fla.—Crop will be short and gathered early.

Perry County, Ala.—Much of the cotton land, prepared with commercial manures, has failed to produce fair crops.

Greene County, Ala.—Rust and the boll-worm are proving very destructive to the crop. Rust worse than ever known before in the county.

Macon County, Ala.—The crop has been seriously injured by drought and rust. Guano has done injury, owing to the extremely hot weather in the month of August.

Butler County, Ala.—Crop injured by rust.

Clarke County, Ala.—Much injured by rust.

Randolph County, Ala.—There is promise of a very large crop.

Conceh County, Ala.—Has come out beyond the expectations of all farmers. Prospect of a fine crop.

Marengo County, Ala.—Too much rain has produced rot, rust, and extensive shedding of squares and young bolls.

Marshall County, Ala.—On account of rains there will not be more than half a crop.

Sumter County, Ala.—Only a small amount of middling cotton will be raised.

Autauga County, Ala.—Dry weather has seriously injured the crop.

Claiborne County, Miss.—Unless the fall prove very fine the crop will be at least 15 or 20 per cent. less than that of last year.

Holmes County, Miss.—The boll-worm has made extensive ravages, and the frequent showers in August caused more shedding than usual.

Marion County, Miss.—There is fair promise of an unusual yield.

Hinds County, Miss.—A very short crop.

Rankin County, Miss.—Opening finely, and promises a fair average yield.

Monroe County, Miss.—Greatly-decreased crop on account of ravages of the boll-worm.

Newton County, Miss.—Nothing disastrous occurring, the yield will be fully 33½ per cent. in excess of that of last year. Increase in acreage, fully 10 per cent.

Grenada County, Miss.—The crop may be equal to last year, but not larger.

Clark County, Miss.—A larger acreage, but the crop will fall short of last year's on account of black rust.

Yalabusha County, Miss.—On bottom lands seriously injured by too much rain. On hill land doing better than usual.

St. Helena Parish, La.—Has shed badly on account of the rains. At least two weeks later than last year.

Rapides Parish, La.—A decrease in yield of 20 to 25 per cent. on account of rains and the caterpillar.

Ouachita Parish, La.—Crop will be heavier than last year's by 25 per cent.

Winn Parish, La.—The yield will be at least 5 per cent. larger than that of last year, notwithstanding the excessive rains.

Tensas Parish, La.—An abundant yield; more than can be gathered with the available labor.

Washington Parish, La.—A very favorable year for cotton. Crop will exceed that of last year by one-third.

Coryell County, Tex.—Cotton was never planted in this county until 1869, and then only a small acreage; the yield was fine. This year at least thirty acres to one were planted.

Henderson County, Tex.—Grass-worms made their appearance fifteen days ago, and have injured the crop as much as the good weather improved it. In a few instances they have destroyed the crop entirely. Injury, at least three-tenths. The crop is in a critical condition.

Dallas County, Tex.—A promise of the largest crop ever raised in the county.

Cameron County, Tex.—A much larger area planted than last year. This valley produced four hundred bales last season; will probably produce two thousand this year. A large proportion of the cotton product goes to Mexico.

Red River County, Tex.—The poorest cotton prospect in the last twenty-eight years. A late frost and seasonable showers may give a half crop.

Fannin County, Tex.—Has sustained serious injury from the louse and army-worm. Fully two weeks earlier than last year's crop.

Gonzales County, Tex.—Planters are counting upon one bale per acre. The worm is now at work, but has begun so late as to cause but little apprehension.

Williamson County, Tex.—It is thought that 5,000 bales of 500 pounds each will be produced. In 1869 1,300 bales were produced.

Titus County, Tex.—Great damage being done to crop by heavy rains.

Matagorda County, Tex.—There will not be over one-third to half a crop, on account of wet weather and worms.

Collin County, Tex.—Better than last year, and with a favorable picking season, will be a heavy crop, perhaps 7,000 to 8,000 bales.

Grimes County, Tex.—Good yield and fine staple.

Austin County, Tex.—Although the acreage was larger, the yield is smaller than last year, on account of wet weather and the army-worm.

Coryell County, Tex.—The prospect for a good crop was never better. Farmers are planting cotton to the exclusion of corn.

Kendall County, Tex.—About a bale to the acre is expected, if labor can be procured for picking.

Goliad County, Tex.—The worm has made its appearance, and some crops have been almost entirely destroyed.

Rusk County, Tex.—The crop looks well, and has sustained little damage from worms.

Smith County, Tex.—If the fall season prove as late as last year, the crop will be above an average.

Fayette County, Tex.—On account of the worm, cotton will be shorter than last year.

Wharton County, Tex.—The prospect was good until about the 21st of August, when the worm commenced its ravages. The crop has been injured, and will be little better than last year.

Dallas County, Tex.—The best crop ever known in the county.

Union County, Ark.—Looks better than for many years. A large crop and greater acreage than in any year since the war.

Clark County, Ark.—A better crop than last year. Acreage much larger.

Jackson County, Ark.—Somewhat injured by rains.

Crawford County, Ark.—Above any preceding year.

Columbia County, Ark.—The most promising prospect for the last twenty years.

Prairie County, Ark.—A late fall will give the largest cotton crop ever raised in the county.

Giles County, Tenn.—Nothing but a very late and favorable fall will insure half a crop.

Rutherford County, Tenn.—Unless frost should be later than usual, there will be about eight-tenths of a crop.

Fayette County, Tenn.—An average crop, if the weather continues favorable.

WHEAT.

Chautauqua County, N. Y.—Winter wheat is not yielding as much per acre as was expected before thrashing. The quality of wheat is good.

Tompkins County, N. Y.—Wheat not full in head, but very choice in quality, well gathered.

Erie County, N. Y.—Moist, damp weather caused late wheat to rust.

Westchester County, N. Y.—Wheat and oats have suffered somewhat from drought, but will make average crops.

Sussex County, N. J.—Not more than three-quarters of a crop; the grain shrunken.

Morris County, N. J.—Not much over half a crop, though there is abundance of straw.

Warren County, N. J.—A little short in quantity, but of fair quality.

Burlington County, N. J.—Gathered in good condition.

Perry County, Pa.—Not more than half a crop.

Lebanon County, Pa.—The crop is about half an average; turning out two to six bushels to the hundred sheaves.

Adams County, Pa.—Owing to the long-continued wet weather in spring, wheat and rye are little more than half an average crop, in some cases hardly paying for thrashing.

Bulter County, Pa.—A large crop; harvested in good condition; the grain well filled. The acreage is 20 per cent. above an average.

Montgomery County, Pa.—Inferior to last year's crop in quantity and quality.

Prince George's County, Md.—The crop is a failure.

Cecil County, Md.—Not more than half an average crop, and of inferior quality.

St. Mary's County, Md.—The crop was much injured by scab produced by heavy rains before harvest.

Kent County, Md.—Injured by scab.

Howard County, Md.—In consequence of heavy rains and scab there will not be more than seven-tenths of a crop; the quality very poor.

Highland County, Va.—More than an average crop.

Pulaski County, Va.—The crop harvested in slightly damaged condition, from abundant rains.

Madison County, Va.—Generally speaking, the yield is smaller than that of last year.

Botetourt County, Va.—The crop will be smaller than that of last year.

King George's County, Va.—Rated at four-fifths of last year's crop.

Nelson County, Va.—The crop falls from one-half to three-fifths below the reasonable expectations of farmers.

Spoitsylvania County, Va.—Tappahannock wheat is a fine crop. All late wheat badly injured by scab.

Charlotte County, Va.—Average condition good; yield below the average.

Stokes County, N. C.—The yield is not so great as expected; the quality very good. Considerable smut in some localities.

Chowan County, N. C.—The crop is good; harvested in excellent condition.

Davidson County, N. C.—The best crop for several years.

Burke County, N. C.—A month before harvest the crop was very promising; but it headed badly, the stalks being quite uneven in height, the heads short, and, in general, the yield light, although the grain is good.

New Hanover County, N. C.—A very fine crop; best for eight years.

Greenville County, S. C.—Red-bearded Mediterranean wheat, on rather poor upland, thrashed 12 bushels per acre, weighing sixty pounds per bushel. Condition, excellent. Straw was five feet long.

Dawson County, Ga.—The yield surpasses expectations; it will average 50 per cent. over that of last year.

Forsyth County, Ga.—The crop is considerably above an average.

Campbell County, Ga.—Turns out better than expected. No complaint of rust this year.

Gilmer County, Ga.—Best crop of wheat for many years.

Lewis County, W. Va.—The crop was excellent; harvested in good condition.

Putnam County, W. Va.—The present crop falls short of last year's from a fourth to a third. The quality does not equal expectations.

Webster County, W. Va.—Crop considerably over the average.

Tyler County, W. Va.—Crops generally pretty good.

Livingston County, Ky.—The yield is not large, but the quality is good.

Owsley County, Ky.—The crop is as good as that of last year, and the acreage five times as large. The product will average fifteen bushels to one of seed.

Carroll County, Ky.—Wheat is rather below an average. Rust affected the crop in some of the lowlands along the Ohio and Kentucky Rivers.

Hardin County, Ky.—Yields several bushels less per acre than were anticipated.

Warren County, Ky.—Quality fine and yield large.

Butler County, Ky.—Damaged by wet weather.

Shelby County, Ky.—About one-half a crop.

Russell County, Ky.—Some loss on account of rain, but a better crop than last year.

Christian County, Ky.—Almost entirely ruined by the constant rains from June to the present time.

Oldham County, Ky.—Deficient.

Montgomery County, Tenn.—An immense amount lost by wet weather.

Smith County, Tenn.—Greatly damaged in the shock by the rains.

Coffee County, Tenn.—All damaged in the shock.

Monroe County, Tenn.—Some crops damaged in the shock by wet weather.

Fayette County, Tenn.—Fully up to average.

Hawkins County, Tenn.—Damaged to a considerable extent by the rains.

Greene County, Mo.—Not a large yield, but good quality.

Vernon County, Mo.—Average yield, 12½ bushels per acre.

Cass County, Mo.—Quality excellent; yield not quite an average.

Taney County, Mo.—Deficient in quantity, but good in quality.
Cape Girardeau County, Mo.—Injured much since harvest by rains. The grain is very plump.

St. Francois County, Mo.—Very short crop; quality excellent.

Polk County, Mo.—Will not average more than half a crop.

Edwards County, Ill.—As far as is known, has not yielded as well in weight as was expected.

Stephenson County, Ill.—The quality was never better.

Lee County, Ill.—The average yield, as indicated by thrashing, so far, is seven bushels per acre; quality excellent.

St. Clair County, Ill.—The crop is now being thrashed and marketed in fine condition.

Lawrence County, Ill.—Yielding well, and quality excellent. Less wheat will be sown the coming season than for several years past. Farmers conclude that it does not pay.

Boone County, Ill.—Quality good, but not half a crop.

Livingston County, Ill.—Not an average crop.

Washington County, Ill.—An average yield and superior quality.

Putnam County, Ill.—Quality good, but yield light.

Winneshago County, Ill.—The quality is very fine.

Whiteside County, Ill.—The berry is better than for years, and will furnish excellent flour.

Lake County, Ill.—Better in quality than in 1869, but the yield will fall short.

Williamson County, Ill.—But little inferior to our average yield.

Bureau County, Ill.—The quality is good, but the yield very small.

Marion County, Ill.—The crop is a short one; the quality good.

Fulton County, Ill.—Although the straw is light the yield in grain is satisfactory; the quality the best for many years.

Henderson County, Ill.—Wheat is thin on the ground, but the grain is excellent.

Alexander County, Ill.—Winter wheat is very poor, and averages about 7 bushels per acre.

Pike County, Ill.—Less than a full crop, although turning out better than expected; the quality excellent.

Sullivan County, Ind.—The crop is not as large as that of last year; will average 10 bushels per acre.

Miami County, Ind.—Will average about 10 bushels per acre.

Franklin County, Ind.—Not more than seven-tenths of last year's crop; the quality good. The price fluctuates from \$1 to \$1 40 per bushel.

Delaware County, Ind.—Wheat was badly damaged by winter-killing, but the grain is plump and of excellent quality.

Elkhart County, Ind.—Wheat, our staple crop, was harvested in good condition.

Warren County, Ind.—A large portion of the crop has been thrashed, and thus far does not exceed eight bushels per acre; the quality is good. The seeding will be large this fall, and early.

Washington County, Ind.—The yield is probably not more than one-third that of last year.

Kosciusko County, Ind.—Secured in excellent condition.

Jennings County, Ind.—A very hot and dry summer. Wheat and all other crops are short.

Putnam County, Ind.—Two-thirds of a crop, but above average in quality.

Whitley County, Ind.—Nine-tenths of an average crop; but the qual-

ity is one-tenth better than that of last year. The price is higher than then, being \$1 to \$1 05 per bushel for old wheat, and \$1 10 for new.

Johnson County, Ind.—Thrashers estimate the yield at little more than half that of last year; but the quality is No. 1.

Miami County, Ohio.—Wheat has been harvested in excellent condition, averaging 25 bushels per acre; the grain very heavy.

Hardin County, Ohio.—The crop was somewhat deficient in quantity, but the grain was very plump.

Noble County, Ohio.—The yield is smaller than that of last year; the quality better.

Marion County, Ohio.—Winter wheat is of excellent quality, and a larger crop than was expected.

Jackson County, Mich.—The harvest was considerably interrupted by frequent rains, and the crop was somewhat damaged.

Lapeer County, Mich.—The crop was thin on the ground, owing to winter-killing; the berry is good.

Ionia County, Mich.—Much was winter-killed, and a considerable part of the crop sprouted before it was housed.

Cass County, Mich.—Wheat thrashed in fine condition. It is yielding 20 per cent. more flour to the acre, and of higher grade, than was obtained last year.

Van Buren County, Mich.—Drought since June 15. The wheat crop falls far short of what was anticipated.

Washtenaw County, Mich.—Wheat is remarkably plump, and turns out better than was expected.

Washington County, Wis.—The grain is very plump; weighs 60 to 62 pounds per bushel. Average crop about 14 bushels per acre.

Walworth County, Wis.—Not more than three-fifths of an average crop, but superior in quality.

Waushara County, Wis.—The yield is very deficient; the quality good.

Fond du Lac County, Wis.—Wheat is very plump and sound. Nearly all will be No. 1.

Dunn County, Wis.—Early sown wheat, on clay soil, is nearly an average crop, while that sown later, and on sandy soil, is very light.

Grant County, Wis.—Owing to severe drought in June and July the crop is less than that of last year; but what is wanting in quantity is more than made up by superior quality.

Jackson County, Wis.—A light crop, but of good quality.

Milwaukee County, Wis.—A good yield of grain of the very best quality.

Marquette County, Wis.—About a two-thirds crop.

Green Lake County, Wis.—Condition remarkably good.

Green County, Wis.—Light crop in number of bushels, but No. 1 in quality.

Wright County, Minn.—Little more than half a crop; and severe rains within a few days past have done great injury to the grain stacks.

Houston County, Minn.—The yield is light, but of excellent quality.

Carver County, Minn.—Yield not as good as last year, but quality much superior.

Ramsey County, Minn.—Lighter crop than was anticipated, but quality splendid.

Fillmore County, Minn.—Wheat was harvested in first-rate condition, also oats, barley, and rye.

Wabasha County, Minn.—The crop was cut and stacked in the best

possible condition, but the great rain of 22d August materially damaged it.

Goodhue County, Minn.—Excellent in quality.

Washington County, Iowa.—Superior in quality.

Dubuque County, Iowa.—Remarkably good; best ever raised in the county.

Benton County, Iowa.—Wheat was harvested in excellent condition.

Des Moines County, Iowa.—The yield averages about seven and one-half bushels per acre, and the harvest was the earliest known for thirty years. The drought has been unequalled since 1857, when there was a good crop of wheat, though harvested very late.

Taylor County, Iowa.—A fair crop, and of fine quality.

Iowa County, Iowa.—The crop is less than average, but superior in quality.

Hardin County, Iowa.—A short crop, but of good quality.

Clinton County, Iowa.—Owing to continued drought since the early part of spring, wheat, oats, barley, rye, &c., gave a small yield, and the straw was short; but the grain was of very good quality.

Muscatine County, Iowa.—A light crop, but of unusually good quality.

Montgomery County, Iowa.—An average crop; the grain very fine and plump; wheat has been stacked in fine order.

Hancock County, Iowa.—A better crop than was expected, and of excellent quality.

Clayton County, Iowa.—The yield is 12 to 15 bushels per acre, of excellent quality.

Floyd County, Iowa.—Owing to drought the crop is a light one; not more than half of last year's extraordinary product.

Cherokee County, Iowa.—The average yield on old ground is about 11 bushels per acre; on new ground, 5 bushels.

Appanoose County, Iowa.—A light crop, but of excellent quality.

Page County, Iowa.—Spring wheat averages about 13 bushels per acre; fall wheat, drilled, 20 to 25 bushels.

Cherokee County, Kans.—Wheat will not average more than 11½ bushels per acre. The heavy fall of rain which closed the severe drought was followed by ten days of damp weather, and much wheat has been spoiled in stack.

Nemaha County, Kans.—Grain was stacked in good condition. The crop is an average in quantity, and of superior quality.

Morris County, Kans.—Winter wheat averages 20 bushels per acre of superior quality; twice the usual breadth will be sown this fall.

Coffee County, Kans.—Winter wheat is an average crop, and more than average in quality. Much wheat and other grain has been damaged in stack by heavy rains in August.

Wilson County, Kans.—Wheat averages 63 pounds to the bushel.

Leavenworth County, Kans.—The crop is excellent; better than for many years. Stacking is over and thrashing is in progress; the weather very fine.

Butler County, Kans.—The yield is not as great as was expected, but the quality is very good.

Wyandotte County, Kans.—Wheat was harvested without rain, and is of very superior quality.

Jefferson County, Nebr.—A fair crop, though a lighter one than last year.

Cuming County, Nebr.—The yield is of superior quality, and on well cultivated land will be equal in quantity to that of last year.

Lancaster County, Nebr.—Small grains prove a very light crop, owing to excessive drought in June and July.

Red River County, Tex.—The Tappahannock makes 16 bushels per acre; other wheat, about 10 bushels.

San Diego County, Cal.—Wheat, as well as other grain, is almost a total failure, nearly all the crop being cut as hay.

Stanislaus County, Cal.—The crop falls considerably below anticipation; thousands of acres will not be harvested. The wheat crop of the county is about 425,600 bushels, against 1,000,000 bushels in 1869.

Santa Clara County, Cal.—On land affected by drought the crop will be quite light, the grain small, and much of it shrunk. On land of opposite character the yield will be average in quantity and quality.

Alameda County, Cal.—Wheat, barley, and oats will not be more than three-fourths of the average crops, although the grain is very plump and fine.

Mendocino County, Cal.—The main crop of wheat is quite one-fifth above an average, but that sown late turns out poorly, owing to the dry season having commenced earlier than usual.

Linn County, Oreg.—The acreage is probably one-sixth larger than that of last year; the yield not as good. The extreme heat of July and August caused a slight shriveling of the grain. Wheat being a staple hog feed in this State, its increased value will cause a falling off in the pork supply.

Douglas County, Oreg.—Wheat gave excellent promise in May and June, which has now been disappointed, the grain failing to fill on account of drought in July and August.

Columbia County, Oreg.—Winter wheat is plump, spring wheat shriveled, being damaged one-tenth by this cause.

Marion County, Oreg.—Late grain is not heavy, but the quality of product in general is good. It is being saved in good condition, and commands \$1 to \$1 15 per bushel at warehouses on the river.

Utah County, Utah.—Wheat, which looked well at harvesting, turns out poorly on being thrashed.

Washington County, Utah.—The heaviest crop obtained for several years.

Yankton County, Dak.—The quality is much better than that of last year.

HAY, PASTURAGE, ETC.

Androscoggin County, Me.—Light hay crop.

Waldo County, Me.—Pastures suffering from drought.

Sullivan County, N. H.—Hay product estimated at about three-quarters of a crop.

Hampden County, Mass.—Pasturage dried up.

Berkshire County, Mass.—Hay crop about one-third short.

Plymouth County, Mass.—Pastures nearly all dried up.

Worcester County, Mass.—Very dry pastures.

Tolland County, Conn.—Hay is worth \$35 a ton.

Wayne County, N. Y.—About one-third of a crop of hay.

Delaware County, N. Y.—Pastures deficient.

Jefferson County, N. Y.—Pastures look as if burned over. Unless there is sufficient rain soon there will be no fall feed.

Madison County, N. Y.—Hay less in quantity, but of better quality than last year.

Essex County, N. Y.—About half a crop of hay.

Westchester County, N. Y.—Pastures dried up.

Hudson County, N. J.—Hay crop very large and harvested in good condition.

Washington County, Pa.—The wet weather has damaged about one-sixth of the timothy hay crop.

Beaver County, Pa.—Pastures very good.

Baltimore County, Md.—The hay crop was never more abundant.

Nelson County, Va.—Very little clover saved without damage.

Amelia County, Va.—Pastures drying up.

Alleghany County, N. C.—Hay seriously damaged.

Montgomery County, Tenn.—Comparatively little hay saved.

Robertson County, Tenn.—Pastures are rich and tender and very fine for fattening beef cattle, and bringing up all stock in fine condition to go into winter quarters.

Coffee County, Tenn.—Hay much damaged in the shock.

Giles County, Tenn.—Pastures luxuriant, but not sufficiently nutritious to fatten stock.

Greene County, Tenn.—Pastures unusually good.

Monongalia County, W. Va.—Fall pasturage excellent.

Webster County, W. Va.—The grass crop considerably above the average.

Mineral County, W. Va.—The second growth of grass on meadows destroyed by grasshoppers.

Oldham County, Ky.—Grass fine all the season.

Gallatin County, Ky.—Pastures parched by dry weather.

Spencer County, Ky.—Abundant fall grass.

Butler County, Ky.—A large crop of hay, but damaged in harvesting.

Henry County, Ky.—Pastures parched to death.

Ohio County, Ind.—Pastures are all dried up; drought still continues.

Jefferson County, Ind.—Hay is a very short crop.

Wayne County, Ind.—A severe and prolonged drought; pastures are all dead.

Putnam County, Ind.—Hay is a very short crop, but of excellent quality.

Warren County, Ind.—Fall pasture is doing well; but there is a scarcity of stock water in many places.

Cedar County, Mo.—Hay crop severely injured by drought.

St. Francois County, Mo.—Hay crop almost a total failure.

Moniteau County, Mo.—The army-worm is injuring the crab grass and the meadows.

Lincoln County, Mo.—The army-worm is cleaning up our pastures.

Jefferson County, Mo.—Hay light; pastures poor.

Chariton County, Mo.—Fall pastures excellent.

Adair County, Mo.—Hay crop very light.

Clay County, Mo.—Fall grass will be fine.

Vernon County, Mo.—Many meadows entirely dried up and being plowed.

Pope County, Ill.—The army-worms are eating out the pastures, and will perhaps delay the seeding of wheat.

Lafayette County, Ill.—The hay crop was short.

Cook County, Ill.—The hay crop shortened by the drought.

Meigs County, Ohio.—Pasture is short.

Franklin County, Ohio.—Notwithstanding the drought our clay-land pastures are good, and stock is doing tolerably well.

Lake County, Ohio.—Hay of all kinds was gathered in bad order, being imperfectly cured.

Harrison County, Ohio.—The hay crop was very large, but somewhat injured by rains.

Eric County, Ohio.—Pasture is very good, and stock in fine order.

Columbiana County, Ohio.—Frequent rains: fall pasture abundant, and almost as fresh as in May.

Ionia County, Mich.—All hay that was secured seasonably is in fine condition.

Marquette County, Wis.—Timothy and clover injured by drought, but marsh hay heavy and of good quality.

Richland County, Wis.—Fall feed is first-rate.

Green County, Wis.—Pastures better than at any time this season.

Rock County, Wis.—Much of the deficiency in hay will be supplied by corn fodder and Hungarian millet.

Walworth County, Wis.—The hay crop is very deficient, but will be helped out by the superior quality of straw, and a large amount of pasturage and corn stalks.

Brown County, Wis.—The hay crop is not over seven-tenths of last year's yield; much injured by rain.

Sac County, Iowa.—Timothy has been sown here only three or four years. It does exceedingly well, yielding one and one-half to two tons per acre. The dependence of feeders is mostly on wild hay, of which there is always plenty.

Des Moines County, Iowa.—The drought has been unequaled since 1857. On the 20th of July, in one section of the county, the people were feeding cows as in winter, the pastures looking as bare as in that season.

Muscatine County, Iowa.—Timothy yields about three-quarters of a ton per acre, of superior quality.

Cedar County, Iowa.—Pasture has greatly revived under the effect of heavy rains.

Floyd County, Iowa.—The crop of tame grass was light; a large amount of wild hay was made.

Miami County, Kans.—Owing to late rains fall pasture will be good.

Shawnee County, Kans.—Pasture is better than it has been for several years.

Coffee County, Kans.—Considerable hay damaged by August rains.

Leavenworth County, Kans.—The grass crop is excellent.

Utah County, Utah.—Hay is short, owing to drought.

Lane County, Oreg.—The hay crop is above an average.

Linn County, Oreg.—The hay crop is excellent and saved in good condition.

RYE, OATS, BARLEY, BUCKWHEAT, POTATOES, ETC.

Aroostook County, Me.—Buckwheat never promised better.

Hillsborough County, N. H.—An inferior crop of potatoes.

Orange County, Vt.—Potatoes and turnips need rain.

Essex County, Vt.—The month has been unfavorable for all crops.

Orleans County, Vt.—Buckwheat more or less blighted by drought.

Wayne County, N. Y.—About one-third of a crop of oats and barley.

Eric County, N. Y.—Bountiful crops generally.

Monroe County, N. Y.—Large quantities of hops are raised in this county. The crop is greatly injured by insects; not more than half a crop compared with former years.

Wyoming County, N. Y. Oats injured considerably by grasshoppers.

Clinton County, N. Y.—Potatoes will prove a short crop.

Schoharie County, N. Y.—Hops very light.

Mercer County, N. J.—A good prospect for a fine crop of buckwheat.

Hunterdon County, N. J.—Buckwheat damaged by drought.

Atlantic County, N. J.—The potato crop will be nearly a failure.

Hudson County, N. J.—Everything, except potatoes, has succeeded well.

Lebanon County, Pa.—Oats are somewhat more than an average crop.

Washington County, Pa.—Grasshoppers in many places have cut off one-fourth of the oat crop.

Warren County, Pa.—Potatoes were never better.

Butler County, Pa.—Oats are the heaviest crop since 1839; a large area sown. Rye is about three-quarters of a crop.

Perry County, Pa.—Rye is about an average crop; oats more than an average.

Baltimore County, Md.—An excellent crop of oats.

Augusta County, Va.—The oat crop is probably the best that has been harvested for twenty years. Potato crop excellent in quality and yield.

Pulaski County, Va.—Oats were never a better crop.

Surry County, Va.—More than half of the potato crop will be lost by the rot.

Nelson County, Va.—The oat crop seriously damaged by protracted rains.

Fairfax County, Va.—Oats not up to expectations.

Henrico County, Va.—All early crops very good, all late ones very bad.

Wythe County, Va.—Oats injured by the wet weather.

Tazewell County, Va.—The best season for corn, grass, and oats ever known in the county.

Gloucester County, Va.—Potatoes an entire failure.

Nansemond County, Va.—There are many truck crops raised in the county. Peanuts to the extent of about 600 acres; the crop at present appears well where a good stand was obtained; it may, however, with other crops, be very much injured by dry weather, which at the present time threatens a severe drought.

Alleghany County, N. C.—Oats seriously damaged by rains.

Wilkes County, N. C.—The prices of corn, wheat, and rye will about range with those of 1860.

Alamance County, N. C.—The most bountiful crops generally since 1852.

New Hanover County, N. C.—Peanuts are extensively cultivated in this county, and the crop is promising, say twenty per cent. over an average.

Obion County, N. C.—Broom corn is very fine and is becoming a considerable crop, and is paying very large profits.

Davidson County, N. C.—Oats are a better crop than for several years.

Forsyth County, Ga.—All crops are superior to those of last year.

Murray County, Ga.—Crops in this county and throughout Northern Georgia have never been surpassed.

Rapides Parish, La.—Sugar cane about 35 to 40 per cent. better than at this date last year.

St. Mary's Parish, La.—The season has been very favorable for the sugar cane.

Plaquemine Parish, La.—Rice crop being harvested with a fair prospect of an average yield. Sugar cane promising.

Cameron County, Tex.—Cane in good condition. Many have planted to get seed.

Knox County, Tenn.—Some experiments are being made in the cultivation of hops, thus far with success.

Perry County, Tenn.—On account of damaged seeds, peanuts will be short one-third. The crop will amount to 100,000 bushels, 50,000 less than last year.

Montgomery County, Tenn.—Oat crop rank and badly drifted. Good crop of potatoes.

Coffee County, Tenn.—Oats damaged by the wet weather.

Fayette County, Tenn.—Abundant crops of early oats and Irish potatoes; late sorts not so good but promise well.

Lewis County, W. Va.—Oats were an excellent crop, and were harvested in good condition.

Braxton County, W. Va.—Crops generally are good, and farmers are much encouraged.

Webster County, W. Va.—The oat crop is considerably above the average.

Preston County, W. Va.—Potatoes are in fine condition.

Jefferson County, W. Va.—There will be an abundant yield of hops.

Wharton County, Tex.—The acreage in sugar cane is annually increasing, on account of the destruction of cotton by the worm the last seven years. The crop promises well.

Bureau County, Ill.—Oats are a short crop.

Stephenson County, Ill.—Potatoes never so poor.

Lee County, Ill.—Late potatoes are nearly or quite a failure from dry weather and bugs.

McHenry County, Ill.—Early potatoes greatly injured by drought.

Boone County, Ill.—Oats, quality poor, and not half a crop. Potatoes not enough for home consumption.

Putnam County, Ill.—Smaller crop of potatoes than we have had in ten years.

Cass County, Ill.—The Early Rose potato has succeeded well. Very fine ones are now selling at \$1 per bushel. The early varieties will be our principal dependence for winter use.

Ford County, Ill.—More than usual flax was sown, and will pay as well as anything this season. A larger breadth than usual of broom corn was planted, and promises a good crop. Double the usual amount of sorghum was planted last spring, and bids fair for a good crop.

Williamson County, Ill.—The oat crop is better than for many years.

Lawrence County, Ill.—Oats are a good crop.

Livingston County, Ill.—Oats are half a crop.

Putnam County, Ill.—Oats are not half a crop.

Henderson County, Ill.—Rye is thin on the ground, the grain excellent. Oats are light in weight, and the straw short.

Montgomery County, Ind.—The potato crop has been cut short by drought; cabbage is rotting, but not so badly as last year. The rot proceeds up the stalk to the center of the head. Many evergreens are dying.

Ohio County, Ind.—Buckwheat is nearly a failure. Late potatoes are nearly ruined by the drought.

Benton County, Ind.—Oats will probably be more than an average crop.

Jefferson County, Ind.—Oats are a very short crop.

Steuben County, Ind.—Potatoes will not be more than half a crop.

Morrow County, Ohio.—Irish potatoes planted early give a fair yield; late planted are cut short by drought, in many localities being scarcely worth digging. The sorghum crop is also shortened by drought.

Greene County, Ohio.—Buckwheat will be almost a failure, on account of drought.

Washington County, Ohio.—Potatoes, both early and late planted, have been injured by drought.

Noble County, Ohio.—Oats are a better crop than last year, and of good quality.

Ashland County, Ohio.—Potatoes are the only crop which will fall short.

Jefferson County, Ohio.—The yield of broom corn is very good. This crop has become of some importance here.

Marion County, Ohio.—Sorghum is seriously injured by drought.

Bay County, Mich.—Barley has been injured by continuous rains in June and July; also, potatoes on low lands to some extent. Farming lands in this county are very level and need a large amount of under-draining to make them profitable.

Ionia County, Mich.—Hops received little care; the crop is light, many fields being abandoned.

Lapeer County, Mich.—Oats are very heavy, and in some places badly lodged.

Branch County, Mich.—Buckwheat is considerably injured by drought.

Calhoun County, Mich.—Hops have generally been abandoned as a crop in this county.

Washtenaw County, Mich.—Oats are a good crop in quantity and quality.

Walworth County, Wis.—Oats are not over two-fifths of an average crop, and inferior in quality. Barley about three-tenths of an average crop, and medium in quality. Potatoes are nearly a total failure.

Brown County, Wis.—Grain harvested since August 15 has been much injured by frequent and heavy rains.

Inman County, Wis.—Hops are cultivated in this county extensively. They have been badly injured by a new species of hop-worm, which commences its ravages as soon as the vine begins to climb, and continues till the time of blossom. Some yards are nearly destroyed, and all are injured. Only half an average crop is expected. Wild cranberries are an important crop in this county; the product is one-third larger than last year, and 6,000 to 10,000 bushels will be marketed in this county. About 6,000 bushels of blueberries and huckleberries, mostly picked by Indians, have been marketed. Price 6 cents per quart.

Milwaukee County, Wis.—The potato crop is very nearly a failure. All but very early varieties totally destroyed by the potato bug.

Dane County, Wis.—The amount of acreage in hops has greatly decreased since 1867-'68, and the acreage is now probably not more than one-third of the maximum amount at that period.

Waushara County, Wis.—The yield of rye is very deficient, but the quality good. Hops are in fair condition.

Washington County, Wis.—Rye is a poor crop.

Marquette County, Wis.—Potatoes are very poor.

Green Lake County, Wis.—Oats light.

Jefferson County, Wis.—Hops are doing well. The acreage is not more than one-half that of former years.

Olsted County, Minn.—A hail-storm on the 14th of July destroyed a large quantity of grain in this county.

Watonwan County, Minn.—Potatoes are a failure.

Wright County, Minn.—The severe drought has affected crops of all kinds. Oats are not half a crop.

Ramsey County, Minn.—Oats are seven-tenths of a crop.

Washington County, Iowa.—Abundant rains in August have greatly helped late potatoes, many corn-fields, and pastures.

Taylor County, Iowa.—Potatoes are a failure on account of the July drought. Rains are improving very late crops.

Lee County, Iowa.—Potatoes have received very great advantage from rains of August 2 and subsequent dates.

Benton County, Iowa.—Oats and barley were never harvested in better condition.

Des Moines County, Iowa.—The yield of oats ranges from 20 to 25 bushels per acre; barley averages about 16 bushels per acre.

Muscatine County, Iowa.—Rye and barley are light crops, but of superior quality. Oats are a failure, yielding only about 12 bushels per acre, weighing 27 pounds per bushel. Potatoes are a failure. Beans are dried up. Sorghum is thin on the ground.

Clayton County, Iowa.—Oats average about 22 bushels per acre: an unusually poor crop.

Story County, Iowa.—Potatoes are almost a failure.

Floyd County, Iowa.—Oats are a light crop, and potatoes almost an entire failure.

Montgomery County, Iowa.—Rains in August have given a start and rapid growth to crops.

Cracford County, Iowa.—The yield of oats and other grains is not over seven-tenths of last year's crop, but the quality is excellent.

Cherokee County, Kans.—Owing to introduction of new varieties, the crop of oats is above the average, reaching 33 bushels per acre. Potatoes cannot exceed half a crop, on account of drought and potato bugs.

Nehama County, Kans.—Dairy products are increasing, and are improving in quality.

Leavenworth County, Kans.—Recent rains have revived potatoes, and they will make a fair crop. Oats will make a good yield.

Wilson County, Kans.—Oats are nearly a failure in consequence of drought in the first part of the season.

Butler County, Kans.—Potatoes have done well. The earliest varieties are found best suited to this climate. The crop should be made by the 1st of July, before very hot weather sets in.

Merrick County, Nebr.—No rain from May 20 to August 11, (except for a few moments on July 16.)

Douglas County, Nebr.—Small grain has been somewhat lessened in weight by drought, but has been harvested in fine condition.

Otoe County, Nebr.—Frequent light showers during August have greatly benefited late crops. Potatoes, sweet potatoes, and cabbage, which promised to be failures, have revived, and will yield about an average crop.

Lancaster County, Nebr.—Potatoes will be an average crop.

Douglas County, Colo.—The extreme drought has injured crops on all lands not irrigated by streams from the Snow Range.

Weld County, Colo.—This is the driest season since 1863; but the facilities for irrigation have been so much increased that crops in general are good.

Lewis and Clarke County, Mont.—Crops have been much injured by heavy frosts during August.

Utah County, Utah.—Barley and oats turn out poorly at thrashing; potatoes will probably be not more than half a crop. All crops are injured by grasshoppers.

Iron County, Utah.—In some parts of the county potatoes are seriously injured by blight, while in other parts the crop is excellent.

Hall County, Nev.—The drought has been extraordinary, but taking crops in general they are better than they were last year.

Alameda County, Cal.—The beet crop is looking well throughout this section.

San Diego County, Cal.—Oats and barley nearly a total failure, the crop being chiefly cut for hay. The wool clip is light, owing to bad condition of sheep.

Stanislaus County, Cal.—The barley crop of the county is about 201,000 bushels.

Linn County, Greg.—Oats are better than ever before; the bean crop is not one-quarter as good as formerly.

Douglas County, Oreg.—Potatoes will be very scarce and high, unless rain is soon had.

THE POTATO BUG.

Monmouth County, N. J.—Potato worms have been very destructive in a portion of the county; they have destroyed the leaves of all the vines for a distance of six to ten miles in every direction around Freehold; some fields destroyed in two days.

Brooke County, W. Va.—Potatoes greatly injured by the bugs.

Cook County, Ill.—The potato bugs have nearly destroyed our potato crop.

McHenry County, Ill.—The bugs have nearly ruined late potatoes.

Winnebago County, Ill.—The bugs have nearly destroyed the potatoes, and are now at work on tomatoes.

Cass County, Ill.—The potato bug has nearly destroyed our late potatoes.

Kendall County, Ill.—Potato bugs are making sad havoc in many fields.

Lawrence County, Ill.—Potato bugs unusually plenty, but came late in the season.

Sangamon County, Ill.—The bugs—first the Colorado beetle, and then *Cantharis vittata*—have seriously damaged our potatoes.

Edwards County, Ill.—The potato bugs, both kinds, have been very destructive.

Ford County, Ill.—Potato bugs are doing their yearly work, on the late planted vines especially, and will cause a short crop.

Madison County, Ill.—Late potatoes suffer severely on account of the Colorado bugs.

Howard County, Ind.—Potatoes promised well, but are badly injured by *Doryphora decemlineata*.

Scott County, Ind.—Great damage done by the potato bug.

Ripley County, Ind.—Potatoes nearly destroyed by the Colorado bug.

Delaware County, Ind.—Potatoes almost a total failure from drought and the potato bugs.

Lagrange County, Ind.—Three-quarters of the potato crop has been destroyed by bugs.

Martin County, Ind.—The potato crop would have been unusually large had it not been greatly lessened by bugs, of which there are three kinds: the black with white stripe, the brown, and the Colorado.

Marion County, Ind.—Potatoes are almost all destroyed by the Colorado bug, excepting early varieties, planted early.

Mercer County, Ohio.—Potatoes will be ruined by bugs.

Noble County, Ohio.—Potatoes are likely to be greatly injured by the bugs.

Athens County, Ohio.—Potatoes will be cut short by the long seven-lined bug. The Colorado bug has not appeared here.

Berrien County, Mich.—Potatoes are a failure in consequence of drought and the bugs.

St. Joseph County, Mich.—The potato is greatly shortened by the Colorado bug.

Hillsdale County, Mich.—The potato crop looks well, except on sandy soils, where the bugs have in some cases destroyed the whole crop.

Van Buren County, Mich.—Considerable injury to potatoes by the striped bug.

Jackson County, Mich.—The potato bug has been very troublesome, but has been effectually fought with much labor, and the actual damage will not be great.

Branch County, Mich.—Quite one-half the crops will be destroyed by bugs.

Calhoun County, Mich.—Potatoes promised well, but have been badly injured by the Colorado bug.

Monroe County, Wis.—Potatoes have been almost destroyed by bugs, except Early Rose and Wisconsin Peach Blow, which were out of the way before the bugs appeared in force.

Walworth County, Wis.—Potatoes are nearly a failure in consequence of drought and the potato bug.

Waushara County, Wis.—Potatoes are badly infested by bugs, yet appear in tolerable condition.

Outagamie County, Wis.—Potato bugs were very numerous; but Paris green, mixed with ten times its proportion of flour, has proved a specific against them.

Fond du Lac County, Wis.—The bugs have been kept off by free use of Paris green.

Washington County, Wis.—The potato crop is reduced one-half by the Colorado bug.

Dane County, Wis.—The Colorado bug has been more destructive than in any previous year; has been here five years.

Ozaukee County, Wis.—The potato bugs have eaten half the potato crop; the whole country is swarming with them.

Dakota County, Minn.—Potatoes about used up by the bugs. Will not have a half crop.

Olmsted County, Minn.—The potato bug has nearly destroyed the crop in this county.

Goodhue County, Minn.—Potatoes damaged worse than ever by the Colorado bug.

Dakota County, Minn.—The potato crop was very light, owing to drought. The potato bug was kept off by the application of Paris green mixed with flour, in the proportion of one part of the former to thirty of the latter.

Houston County, Minn.—Potatoes are almost a total failure on account of the bugs. These are very numerous, and are now eating the tomatoes, root and branch.

Freeborn County, Minn.—Owing to drought and the potato bug, potatoes will not be more than half a crop.

Palo Alto County, Iowa.—Potatoes will be a short crop on account of drought and bugs.

Lincoln County, Nev.—The acreage in potatoes was larger than usual, but a great part of the crop has been destroyed by insects. Enough will be left for home consumption.

TOBACCO.

Prince George's County, Md.—Crop materially affected by the drought.

Buckingham County, Va.—The average yield has been reduced at least one-tenth.

Henry County, Va.—Never so good before.

Rockingham County, Va.—An excellent crop.

Henry County, Va.—Better than it has been for five years.

Columbus County, N. C.—There is a material increase of acreage.

Davis County, N. C.—More planted than ever. The crop promising.

Montgomery County, Tenn.—Very uneven; some crops good, others failures. Many crops already cut prematurely on account of wet weather.

Robertson County, Tenn.—On account of excessive rains the crop has been pushed forward too fast to make a heavy and rich article, though the leaf is of fine length and breadth.

Livingston County, Ky.—More than an average planted, and prospects favorable.

Callaway County, Ky.—Heavy rains and worms have very much injured the crop.

Henry County, Ky.—A large breadth of land has been planted to tobacco, which promises well.

FRUIT.

Piscataquis County, Me.—Apple crop will be large.

Sullivan County, N. H.—The largest crop of apples for several years.

Rockingham County, N. H.—A good apple crop.

Berkshire County, Mass.—A better crop of apples than for several years.

Norfolk County, Mass.—Apples abundant.

Essex County, Mass.—The fruit crop will be large.

Middlesex County, Conn.—Apples abundant.

Ulster County, N. Y.—Apples falling off on account of dry weather.

Columbia County, N. Y.—The apple crop is large. Few peaches.

Westchester County, N. Y.—An abundant crop of apples.

Niagara County, N. Y.—The largest crop of apples ever raised in the county. Grapes abundant.

Ontario County, N. Y.—Grapes are ripening finely and large quantities are being sent to eastern markets. Good crop of apples; an inferior one of peaches.

Passaic County, N. J.—A good year for all kinds of fruit.

Hunterdon County, N. J.—The peach crop greatly damaged by the heat and drought.

Burlington County, N. J.—Apples and peaches much injured by insects.

Franklin County, Pa.—Apples, peaches, and grapes affected by the great heat of August.

Warren County, Pa.—A great crop of apples.

Cecil County, Md.—Apples are very defective—nearly all injured by worms.

King George's County, Md.—Apples abundant; peaches scarce.

Nelson County, Va.—Peach crop large, but many are rotting and falling off. Apple trees are well loaded.

Fairfax County, Va.—Apples and peaches are decaying on the trees.

Buckingham County, Va.—About three-tenths of the winter fruit has fallen from the trees.

Norfolk County, Va.—Peaches a total failure.

Spottsylvania County, Va.—Crop of peaches large, but they rot badly. Apple and pear crops very good.

Franklin County, N. C.—The wet weather will cause a failure of winter fruits.

Le Noir County, N. C.—Peaches rotting on the trees.

Gaston County, N. C.—All kinds maturing without blight.

Davie County, N. C.—A good crop of apples.

Union County, S. C.—Peach crop abundant, but fruit small.

Towns County, Ga.—Apples abundant.

Talbot County, Ga.—Peach crop almost an entire failure.

Conecuh County, Ala.—Fruit prospect not good.

Cooper County, Miss.—Apples and peaches almost an entire failure.

Grenada County, Miss.—Fruit crop nearly a failure, including grapes. The Scuppernong much the best.

Avozelles Parish, La.—Peaches nearly a total failure.

Bexar County, Tex.—Grapes are ripe, the yield and flavor astonish every one. Germans say they never saw the most highly cultivated vineyards of the Rhine equal the product of this county.

Houston County, Tex.—Peach crop an entire failure on account of frosts. The apple crop is fine, and people are turning their attention more to raising them.

Montgomery County, Tenn.—Peach and apple crops fair. Peaches on the higher grounds have failed.

Coffee County, Tenn.—Apple crop a full crop; peaches a failure.

Jefferson County, Tenn.—Fruit crop very abundant.

Monroe County, Tenn.—Apples abundant, but rotting badly; peaches scarce.

Fayette County, Tenn.—Apples, in quantity, a fair yield, but defective. Peaches a total failure.

Hawkins County, Tenn.—Apple orchards generally have a large crop, but the fruit to a considerable extent is badly specked and falling from the trees.

Preston County, W. Va.—A fine crop of grapes.

Tyler County, W. Va.—Apples, peaches, and cherries seldom known to be so scarce.

Brooke County, W. Va.—Apples almost an entire failure; peaches not quite an average; grapes are in very good condition.

Fayette County, Tex.—Peaches an entire failure, owing to late frosts.

Butler County, Ky.—Apples abundant, and grapes better than ever I saw them in the county.

Jefferson County, Ky.—Very few peaches; pears, and some varieties of apples, very fine.

Livingston County, Ky.—Only a half crop of peaches.

De Kalb County, Mo.—Apples scarce.

Cooper County, Mo.—Apple and peach crops almost an entire failure.

Osage County, Mo.—Not more than one-sixth of an average crop of apples and peaches.

Howard County, Mo.—The apple crop is a failure; no pears, and only a few peaches.

Dade County, Mo.—Peaches and apples a failure.

Adair County, Mo.—Peaches abundant; apples few and very poor.

Scott County, Mo.—Peaches a failure this year.

Holt County, Mo.—Apples in good condition, but not one-tenth of a crop.

Cape Girardeau County, Mo.—Peaches entirely destroyed by early severe weather; other fruits generally escaped. Grapes suffering some from rot, but the crop is as large as usual.

St. Francois County, Mo.—No apples or peaches. But few grapes raised; quality good.

Stoddard County, Mo.—Very few apples or peaches.

Cedar County, Mo.—Half crops of apples and peaches.

Springfield County, Ill.—The grape crop is remarkably fine. Grapes and peaches have ripened much earlier than usual in this county this season.

Pope County, Ill.—More than one-half of the county has no peaches, and there is but a small crop in the remainder. Apples, hardly a half crop, and defective.

Lafayette County, Ill.—Peaches are abundant. The apple crop will not be an average one. Grapes are fine, but not in demand.

Hancock County, Ill.—The grape crop is superior.

Livingston County, Ill.—Apples, for the first time in the history of this section, are plentiful.

Clay County, Ill.—The largest crop of peaches and grapes ever raised in the county.

Putnam County, Ill.—Many apples falling on account of drought.

Steuben County, Ind.—The quality of apples was never better, but the crop is less than an average. The same with regard to peaches.

Fayette County, Ind.—Apples and peaches falling off.

Montgomery County, Ind.—Many peach trees are dying.

Floyd County, Ind.—Peaches are almost a failure. Summer and fall apples abundant; winter apples almost a failure.

Allen County, Ind.—Apples are not more than one-third of a crop.

Wayne County, Ind.—A severe drought. Fruit an entire failure.

Vanderburgh County, Ind.—Apples are about two-fifths of a crop, but an average in quality. Grapes are excellent in quantity and quality.

Athens County, Ohio.—Apples are gnarly and poor; the crop almost a failure. Grapes are in good condition, and more than an average crop.

Meigs County, Ohio.—The apple crop is knotty and wormy; not over one-tenth the amount of last year.

Greene County, Ohio.—Apples and peaches have fallen off greatly, and there is some rot among grapes. Pears are a very fair crop.

Washington County, Ohio.—Apples are nearly a failure.

Noble County, Ohio.—Apples and peaches are scarce and of poor quality.

Ross County, Ohio.—Abundance of grapes, but few apples and fewer peaches.

Butler County, Ohio.—Grapes are better than for the past five years.

Marion County, Ohio.—Apples, peaches, and grapes are seriously affected by drought. The latter crop promised well.

Ionia County, Mich.—Apples were never better, and there will be a large surplus. Not so with other fruit.

Clinton County, Mich.—An extra crop of cranberries.

Branch County, Mich.—Apples and peaches will be a short crop.

Calhoun County, Mich.—The apple crop is large and well grown, but peaches are scarce; grapes are fine, ripening being ten days in advance of last year. Delawares, Hartford Prolific, and Ives's Seedlings are gathered; Concord ripe; Rogers Hybrids 4 and 15, nearly so; Isabella and Clinton well colored.

Van Buren County, Mich.—Owing to drought there is very little fruit.

Washtenaw County, Mich.—Apples are fine and abundant; peaches and quinces a short crop; grapes superior.

Marquette County, Wis.—The crop is good.

Ramsey County, Minn.—About two-thirds of a crop.

Taylor County, Iowa.—The fruit crop was cut off by frost in April.

Muscatine County, Iowa.—Apples are falling from the trees to an unprecedented extent. The grape crop is good.

Madison County, Iowa.—Apples are almost an entire failure.

Woodson County, Kans.—Grapes are much above an average crop.

Franklin County, Kans.—The grape crop is good, though affected by mildew. Isabellas and Catawbas, which had been almost discarded as unprofitable, this year yielded bountifully, 50 per cent. more than Concord.

Cherokee County, Kans.—Fruit is chiefly ruined by late frosts. The country is new and most orchards have scarcely begun to bear.

Franklin County, Kans.—Notwithstanding the prolonged drought, grapes have again rotted, Concord and Clinton being injured as badly as Catawba and Isabella. Last year at the corresponding season it was exceedingly wet, and although Isabella and Catawba suffered, Concord and other varieties were free from rot or blight. The old theories do not appear to give a satisfactory explanation of this experience.

Beaver County, Utah.—Fruit was chiefly killed by late frosts.

El Dorado County, Cal.—Peaches started in the winter, and were frozen. Black Hamburg and Muscadine grapes have mildewed badly from some unknown cause.

Lake County, Cal.—The apple crop is not more than one-quarter of what it was last year; but, with the exception of the Red June, the quality is very superior.

Tuolumne County, Cal.—In many vineyards grapes have been injured by a late frost. Fruit crops of all kinds will be light.

Plumas County, Cal.—Late frosts nearly destroyed fruit. Some attention is being paid to cranberry culture.

San Diego County, Cal.—Fruit will fall short, excepting grapes, which will be nearly an average crop of fair quality.

Los Angeles County, Cal.—The season has been unusually dry and warm. The orange and lemon crop will be an average, and the trees are apparently well filled with the new crop.

Lane County, Oreg.—The apple crop will probably fall much below an average.

Linn County, Oreg.—There are few apples, and no peaches; and the plum crop is poor. The crop of grapes is the finest ever produced.

Columbia County, Oreg.—One-fifth of the apple crop was lost by being sun-burned.

Benton County, Oreg.—Apples are not more than half a crop.

EXTRACTS FROM CORRESPONDENCE.

EXPERIMENTS WITH SEEDS.

Chester County, Pa.—We have just finished thrashing thirty kinds of oats. We find the late-ripening kinds do not weigh so well as the early. The straw is finely grown and clean of rust or disease, but the dry weather seems to diminish the meal. The Cape of Good Hope oats were small in size, but ripened very early. If they improve in stature, as some others have done, their earliness may make them valuable. Taking all things into consideration, we find the Excelsior the most valuable of the lot, very early, handsome, and heavy. Somerset and White Swedish come next in value. Among nearly all the new grains we find a disposition to adapt themselves to our climate. Some of the wheat that did poorly last year stood the winter better and gave promise of considerable

improvement, but the prolonged wet weather prevented all but the very earliest from filling well. The Tappahannock has been the most valuable wheat here among forty kinds this year, on account of its earliness. The wet did not injure it.

Buckingham County, Va.—I received from the Department of Agriculture one quart Arnautka Spring wheat. I sowed it broadcast, the 15th of March; the plat of ground being small, I put it in with a hand-rake, which left it so near the surface that a covey of crows attacked it, and destroyed about one-half before I discovered them. What was left grew off beautifully, and was harvested the 10th of July, yielding at the rate of about 25 bushels to the acre, of as pretty wheat as any raised in this county. I am satisfied that by sowing a little earlier it can be successfully grown in this latitude, and would prove a source of great benefit to tenant farmers, who seldom reach their new homes in the fall in time to sow winter wheat. The seed is already in great request; I shall give it my special attention next year.

Dakota County, Minn.—The package of barley (Saxonian) which I received from the Department has done exceedingly well; it fills well, and the berry is plump, and it stands the drought better than the common barley. The Tappahannock wheat which I received from the Department did not come up to my anticipations. It grew well, but when it came to fill out the heads were very small and the stalks barely able to hold up the heads.

Butler County, Mo.—I have just thrashed my Tappahannock wheat received from the Department. One-quarter of a bushel, sown the 12th of October, broadcast, made six and one-eighth bushels. It promises to do well here; ripens about ten days earlier than the wheat we have been raising.

Lampasas County, Tex.—The Tappahannock wheat sent me by the Department was turned over to Mr. Phil. Smith, an experienced and careful farmer. He sowed the same, and reports as follows: "Sowed the wheat (11 pounds) 3d of December, in drills sixteen inches apart. The wheat was injured by the rust. It was sowed six weeks later than the Red May, and was ten days later in harvesting. One peck was lost in thrashing. Yield, three bushels and one peck, weighing 193 pounds." Mr. Smith thinks it will be the wheat for this climate. He will sow the product early this fall.

Fannin County, Tex.—I have just thrashed the second crop of Tappahannock wheat received from the Department. I received one package and sowed it in November, 1868; thrashed $2\frac{1}{2}$ bushels. Planted that in October, 1869, and thrashed $7\frac{1}{2}$ bushels of indifferent wheat. It is liable to rust here. I will continue to try it, as we are very anxious for it to succeed.

Tioga County, Pa.—I received from the Department one-fourth of a bushel of Tappahannock wheat November 1, 1868. Sowed it November 3, which was about two months after the usual seeding time in this county. September 7, 1869, sowed four bushels on two acres. The early part of the winter being unfavorable, it was considerably injured. Cut July 5, 1870; yield, $46\frac{1}{2}$ bushels. Sowed the same day in the same field four bushels of Blue Stem. Cut July 15; yield, 33 bushels. The straw of the Blue Stem was considerably heavier than the Tappahannock. The Tappahannock is ten days earlier than any other wheat grown in this county.

Gilmer County, Ga.—The Tappahannock wheat received from the Department, after two years' trial, proves to be well adapted to this section, yielding one-third more than other varieties on same land.

Bedford County, Fla.—The Tappahannock wheat sent last year was distributed in two-pound lots. Planted about 20th of October. Harvested last of April. Average yield, 80 pounds from each two pounds planted. Product every way equal in quality to seed planted. Its introduction has created a mania on the wheat subject. Many farmers have asked for lots, that they may experiment and get seed. I think it should be planted 1st of October.

Shelby County, Ala.—The Mediterranean wheat is decidedly the best wheat for the middle portion of this State. The two little bundles received from the Department were sown, and the product saved carefully and resown for three years, and we now have one hundred bushels in good condition, worth \$2 per bushel, while the common wheat brings but \$1 25 in the same market.

SOUTHERN KANSAS.

A correspondent writing from Girard, twenty-five miles south of Fort Scott, says: "Splendid farms are springing into existence all around us. This township, that three years ago could poll but forty votes, has now not a vacant quarter-section of land in its area of sixty-three square miles. This season has been remarkable for its adaptation to the wants of the farmers. Man, had he possessed power, could hardly have bettered it. Early in the spring we had rain enough to put the ground in good working order, and ample time to plow and put in crops, and after that showers every four or five days till the 3d of June; then eighteen clear days, (except one shower and a couple of "sprinklers.") just in time for wheat harvest; then four inches of rain to push the corn, followed by clear hot days while we harvested oats. With such a season, crops could not be other than good. Wheat and oats filled very well, and the crop is a good one, though much of the wheat was on sod and has short heads. Corn is now promising a large yield, and so are potatoes. Other vegetables are abundant."

EXPERIENCE WITH GRAPES.

Springfield County, Ill.—The grape crop is remarkably fine this season, Catawbas and Ionas particularly. Concords are excellent, but the vines are not as full as usual. July 25, Hartfords commenced coloring; July 29, Delawares commenced coloring; and by August the Hartfords were nearly all colored. August 1, Israella one-fourth colored; August 9, Salem, Allen, Concord, and Northern Muscadine coloring; August 10, Diana and Isabella coloring, the latter rotting some; August 12, Hartfords nearly all ripe. On the 15th of August we pulled for market the first Concord, Israella, and Delaware. August 18, Catawbas coloring. From the foregoing notes it will be seen that the ripening of grapes in this county is much earlier this season than usual. Peaches also have ripened earlier than usual, and the corn crop is much nearer maturity than is commonly the case at this date.

Hancock County, Ill.—The grape crop is the best that has been gathered since their introduction in this county. The vines have been free from insects, blight, rust, and mildew, and retain all the healthiness desirable up to the time of ripening. We estimate 1,200 to 1,600 acres in this county, averaging 500 vines to the acre, and each vine will average 10 pounds—making the enormous sum of 6,000,000 pounds, one fourth of which will be marketed for table use, the remainder made into wine. The Catawba, which has failed to give satisfaction for some years past,

has this year redeemed itself, being universally well filled with fine healthy grapes.

Ripley County, Ind.—The grape crop is a fair one, although there is some rot. Apple trees are affected by blight. In the south part of the State the ends of the limbs for five or six inches look as though they had been burned. Pear trees are suffering from fire blight to an alarming extent, there having been some signs of it last year. The varieties most affected are the Urbanist, (very badly,) Stevens's Genesee, Flemish Beauty, Vicar of Winkfield, Onondaga, Dearborn's Seedling, Beurré Diel, and Osband's Summer. Some trees will probably be lost, while the rest may be saved by cutting back to the sound wood. Bartletts are but little affected.

Rutherford County, Tenn.—Further observation with the progress of the season show that the Concord grape, though a profuse bearer, will not do to rely upon. Upon very thin soil the fruit ripened up well and gave some fine bunches; on a fair soil the berries were larger, but the clusters were ragged and the fruit inferior. Hartford Prolific satisfactory. Catawba showed about ten per cent. rot; fruit excellent, and a good crop. Ives's Seedling, Norton's Virginia, and Maxatawney showed no sign of disease; crop good. Diana, Iona, and Creveling total failures.

GRASSHOPPERS IN MARYLAND.

Cecil County, Md.—The grasshoppers have been unusually destructive this summer, owing to the very dry weather in the early part of the season, which favored their rapid production and growth. They do not confine their depredations to grass, low bushes, &c., but attack large trees, stripping them of their foliage in an incredibly short space of time. Some of the finest pear trees in my orchard have been entirely defoliated by these pests, with the exception of a stray leaf here and there. My young cherry orchard has also suffered to a very appreciable extent, but I hope the injury to the trees this year will not materially injure their prospects for 1871.

LARGE YIELD OF SPRING WHEAT.

Marshall County, Kans.—A field of $7\frac{1}{2}$ acres of spring wheat yielded $234\frac{1}{2}$ bushels of good wheat, being very nearly $31\frac{1}{3}$ bushels per acre. The field received no rain from the time the wheat was sown until it was thrashed.

FERTILIZERS IN THE SOUTH.

Weemsboro, Ga.—Thirty-three millions of pounds of guano have been transported over the Georgia railroads during the past season and for the present crops, and the low price of cotton has caused many long faces among our planters.

THE ALL-COTTON MANIA.

Union County, S. C.—There has not been enough corn planted in this county. When our farmers bring corn up to \$3 per bushel and cotton down to 8 cents per pound they will try to raise corn enough for home consumption.

Butler County, Ga.—I am pleased to report the corn crop 10 per cent. above that of last year, and I think there is a healthful public sentiment prevailing now to raise a full supply of the cereals for home consumption at least. The all-cotton mania is subsiding in this county.

A Georgia correspondent writes that the continued decline of cotton and the high price of provisions, compared with the prospective low price of cotton this fall, have settled the minds of many to plant less cotton hereafter. In such a policy only lies the true independence and prosperity of the South.

Liberty County, Fla.—As all other business is neglected for cotton, it seems as if the science of making the latter will be brought to perfection. Where we formerly made 1,000 pounds of seed cotton per acre, 2,000 pounds are now considered a moderate crop; and I verily believe that, with some of the fertilizers and the skill in culture already attained, 3,000 pounds will soon be the average crop of Florida. As an instance of the care taken in making cotton, I remark that a blacksmith planted 10 acres, and his wagon-tire needed repair, and, in place of his doing it himself, he sent his son with it ten miles to another workman.

SEA ISLAND COTTON IN TEXAS.

A correspondent at Galveston sends to the Department a remarkably fine specimen of Sea Island cotton, of which one planter in that quarter has 200 acres in cultivation. "No rains of consequence had fallen from the 15th of April to the 27th of July; although vegetation generally suffered, this cotton was not affected materially, and is remarkably thrifty; it is just beginning to open. The packing season is now at hand, and without any serious disaster from storms, continuous rains, or the ravages of the worm within the present month, a large crop will be gathered on our coast, perhaps a full average of 1,000 pounds of seed cotton to the acre. The staple is very fine, strong, and glossy, and is equal to any yield of previous years."

SUGAR IN LOUISIANA.

Grass worms have made their appearance on the plantations of Captain White, in Jausse Point, and Louis Grevemberg, below Jeannerettes, on Bayou Teche, stripping the foliage from the cane in both cases. The latter reports his crop to be injured eighty hogsheads by their visitation. Reports are circulated of the appearance of this worm on other plantations, but of this we have been unable to obtain accurate information. Crops are all "laid by," and are generally in most excellent condition. Cane shades the ground, and rains are regular and frequent.

DISEASES AND CONDITION OF SWINE.

Ickesburg, Perry County, Pa.—A malignant disease prevails among some herds of swine in this vicinity. The affected animal refuses to eat, coughs, grows feeble; at length is unable to sustain itself on its hind legs; occasionally blotches appear on the skin. There is, in some cases, diarrhea; in others, costiveness; urine, small in quantity and highly colored; occasional vomiting; death occurs sometimes in less than an hour, in other cases not for several days. A post-mortem examination showed that one lung was highly inflamed and hepatized, the other slightly; one kidney too dark colored at one end; the heart quite soft; the butcher (an experienced one) says he never saw a carcass so destitute of blood, "there being no blood at any place, not even in or about the heart;" the meat had the natural appearance; no inflammation about the intestines, pleura, or windpipe.

The hogs were in pasture, with free access to fresh spring water im-

pregnated with lime. The same or a similar disease took off many hogs in this vicinity last fall and this spring. Numerous remedies have been applied, but none efficacious. It is probably the disease described by Dr. Snow in the Agricultural Report for 1861, p. 147.

Wyoming County, N. Y.—There are more pigs from one to five years old in the county than there have been for years.

Montgomery County, Md.—A fatal disease is prevalent among the hogs of this county, some farmers having lost nearly all. The symptoms are the reverse of cholera, viz., constipation of the bowels, great debility, stiffness of the jaws, and loss of appetite. The blood settles behind the ears, and it is attended with much coughing. What is the disease and what the remedy?

Carroll County, Ga.—The numbers of beeves and hogs are increasing.

Richland County, S. C.—The improved condition of hogs is due to fine pasturage.

Leon County, Fla.—Interest in hog raising is on the increase.

Harris County, Tex.—The pork crop will be short in consequence of the late frosts, which destroyed all the mast.

Austin County, Tex.—Hogs are in good condition.

Crawford County, Ark.—Hog crop is rather poor; not quite up to last year in size of hogs.

Clark County, Ark.—Hogs are dying all over the county, more on account of neglect than the prevalence of any particular disease.

Prairie County, Ark.—Hog production has increased, and is heavier than before the war.

Johnson County, Tenn.—Hog cholera has commenced its ravages; some farmers have lost their entire stock.

Coffee County, Tenn.—Some loss of hogs from disease.

Sullivan County, Tenn.—Hog cholera is raging in different localities; other stock healthy and in fine condition.

Monroe County, Tenn.—Hogs scarcer than for many years.

Humphreys County, Tenn.—Hogs dying of cholera.

Payette County, Tenn.—Hog crop satisfactory.

Henry County, Tenn.—In a few localities hog cholera is prevailing.

Henry County, Ky.—Stock hogs are selling for 8 to 9 cents per pound, and are in great demand.

Butler County, Ky.—Hog cholera has plagued us, as usual.

Speacer County, Ky.—Hog cholera prevails in a section equal to one-fifth of the county.

Lincoln County, Ky.—We have the hog cholera and chicken cholera prevailing in portions of our county. No remedy has been found.

Marion County, Ill.—Stock hogs are high, worth 8 or 9 cents, gross.

Edwards County, Ill.—Not so much hog cholera as at the corresponding date last year.

Boone County, Ill.—Stock generally looking well, considering the extreme drought. Stock hogs very scarce.

Clay County, Ill.—We have more stock hogs than for several years, notwithstanding the cholera, which has appeared in some neighborhoods.

Fountain County, Ind.—Hogs are scarce, and, as feed is abundant, will probably command a good price from feeders.

Marion County, Ind.—Some hog cholera; the county is very rarely clear of it of late years.

Dubois County, Ind.—Many hogs have died with cholera.

Harrison County, Ohio.—Stock hogs are in great demand, selling at 10 cents per pound, gross weight.

Ionia County, Mich.—Corn being plentiful, the condition of hog stock is unusually good.

Cass County, Mich.—Hog cholera has appeared in several places, and if it spreads hogs will be marketed before they are full fed.

Muscatine County, Iowa.—Stock hogs are plentiful, but their condition is rather below average, owing to last year's corn crop being deficient in quantity and quality.

Cowley County, Kans.—The estimated increase in the number of hogs is 20 per cent.; yet there is not one-hundredth part of what is required by the demands of home consumption.

Burleson County, Tex.—Fewer hogs, according to population, than for the last twenty-five years.

COMMISSIONER CAPRON'S ADDRESS.

The following address was delivered before the Montgomery County (Maryland) Agricultural Society, by Hon. Horace Capron, Commissioner of Agriculture, on the 14th instant, at Rockville, Maryland:

MR. PRESIDENT, FRIENDS, AND FELLOW-WORKERS IN THE ANCIENT ART OF AGRICULTURE: It is with no ordinary pleasure that I revisit a place which has become remarkable in the rural annals of Maryland for triumphs of progressive agriculture, for the results of the "high-pressure farming" decried by the Rip Van Winkles of twenty years ago. I see in the conspicuous signs of thrift, of high fertility, of heavy production, where once barrenness and desolation ruled the scene, "confirmations strong as proofs of holy writ," ocular and conclusive demonstrations, that you and I were right, and the "low-pressure" delvers in the old fields were wrong.

Thirty years ago these smiling fields, now green and luxuriant at the close of a summer of unusual severity, were dry and bare, the soil hard and intractable, its appearance indicative of that decay and decrepitude in which "the grasshoppers shall be a burden." Few at this day can accurately estimate the utter poverty of the land. A few representatives of those days, noble standard-bearers of the advance guard of improvement, whom I now see before me, will bear willing testimony to its worthlessness for agricultural purposes. A simple anecdote of that period may serve to illustrate its character: A well-known gentleman from the fine corn lands of Prince George's, commanding a troop of cavalry, passed with his company through a corn-field on one of these old farms, (the country roads of that period being only wagon tracks through the fields,) and observing one of his troopers bending over upon his horse and cutting right and left with his sabre, he demanded the cause of so strange and unsoldier-like a breach of discipline. "I am trying to reach the top of this corn," replied the investigating cavalry-man. He might now ride through the same fields and find it equally difficult to reach *up* to the top of the corn.

I feel a personal interest in these "old fields" and the story of their improvement. My first essay in their attempted renovation was in 1836, when I plowed fifty acres and sowed oats and clover, hoping through the agency of plaster of Paris to secure a setting of clover. The spring was favorable: the oats sprouted, as did the clover; a good sprinkling of plaster was applied, but not one sprig of clover ever grew, and the oats were harvested on the "grab system" then so common. For the benefit of young farmers, who are presumed not to understand this mode, I will explain: The cradler makes a sweep with his cradle, and as it rises out of the grain, he "grabs" it with the left hand, and lays it down carefully in a bunch to enable the binder following after to *find it*! In less than ten years these lands yielded 36 bushels of wheat per acre, 100 bushels of corn, and 2½ tons of hay; and the crops had paid the expense of improvement; while the value, estimated at \$10 per acre, had advanced to \$60, and stands to-day at double that sum, after large and profitable crops have been taken for so many years, at small expense for fertilizers.

Another tract, a swamp of sixty acres, which I succeeded in draining and improving, soon bore a heavy crop of timothy, and was permanently reclaimed, becoming, from an unsightly and unhealthy morass, a beautiful and productive meadow.

Amid doubting and criticism these improvements progressed, not at an enormous expense in the nature of a permanent investment, but paying their way in returns almost immediate, and at the same time permanently advancing the value of the property in a degree beyond the gross expense of the work. I thank God that I have lived to see

the renovation inaugurated in those days so general and so successful, especially in this neighborhood, and I feel a proud satisfaction in having borne an humble part in this work of causing two blades of grass to grow where but one grew before.

Memory recurs with pleasure to my first visit to this neighborhood in 1847, a visit made at the invitation of a few of the pioneers in its improvement, who desired me to witness the effect of this system for the restoration of "worn-out lands," then in its infancy, now the established means of fertility and wealth. It is a system of liberal feeding, in opposition to the plan of leaving the soil to improve itself. None of these men believed that an application of manure would "fire" the crop, as many did at that day, or that starvation could be cured by leaving the patient to the *vis medicatrix nature*.

The first remedial agents were lime, plaster, ashes, poudrette, bone dust, and guano, followed by the employment of all the restorative resources of an enriched soil, teeming with production, furnishing abundant and nutritious aliment for herds of thriving cattle, from which in turn increased supplies of fertilizers were obtained; and at the same time the grasses and clover, hitherto unknown in the vocabulary of the growers of tobacco and corn, were permitted to shade the soil from burning suns, to ramify it with their searching roots, areate it, and fit it for seizing upon, and storing for use, plant-food from the air above and the earth beneath.

With such means these men continued their experiments in renovation, hauling six horse loads of fertilizers ten miles over rough roads from the line of the Baltimore and Washington railroad. They had tried turning under green crops without fertilizers, but failed because the land was too poor to produce the needed material for green manuring. Innumerable are the experiments recorded in the journals of these gentlemen, some of which I have been kindly shown, which (did the limits prescribed myself in this address permit) could be quoted to sustain this—invidiously styled—high-pressure system for the restoration of these impoverished lands. In no case do I hear of failure where the land has been properly relieved of its superabundant moisture, thoroughly aerated, and liberally manured.

These efforts in Montgomery, Prince George's, and other counties, reports of which attracted so much attention in the public prints of that period, gave the first impulse which has wrought the magical change from "barren old fields" to the beautiful landscape which now surrounds you—a land groaning under the burden of agricultural wealth, the fairest portion of your State, and worthy to rank as an honor to the highest fertility and best culture in the Union.

Parallel with this enrichment of the soil ran the course of improvement in farm stock. Well do I remember the first exhibition of my own stock, at the Montgomery County Agricultural Society cattle show in 1848, when the president's seat was so ably filled by that noble-spirited and cultivated gentleman, Allen Bowie Davis. Here were the ponderous Durhams, the symmetrical Devons, with finest of horses and mules, exhibited by Messrs. Blagdon, Brown, Clark, Price, Gaither, and others; and an impetus was given to stock-breeding which has left an indelible impress upon the farm animals of Maryland, added to the general wealth and welfare, and materially aided in the work of renovating the worn-out lands of the State.

Since that period, and as a direct result of its impelling spirit of progress, roads have been improved, new avenues of trade and traffic have been opened, shortening the distance to market, and facilitating the transportation of products and the return of fertilizers, and trade generally enlarged by the increased ability of the farmer to purchase.

While you have added depth to your available soil, have greatly increased its productive capacity, ameliorating your heavy clays, draining your low lands, and making your agriculture more systematic, reliable, and profitable, I press upon your attention the fact that the ultimate aims of progress have not yet been reached. While your experiment has settled the question of a profitable renovation of waste lands, and furnished an example which should be followed throughout the South, until the one hundred million acres of old fields shall bloom in beauty, and bear a prolific burden for the sustenance of animal life, you should still remember that there are new fields, on which to surmount new difficulties, and win new triumphs. Your lands do not yet yield an average of 30 bushels of wheat, nor are your soils always sufficiently committed or perfectly drained; you may not have tried the experiment of applying one hundred dollars' worth of manure to the acre, as have the tobacco-growers and onion-raisers of the Connecticut Valley and Rhode Island, to their very great profit; your rotations may not always be arranged with sufficient exactness to the peculiar capacity and condition of the several sections of your farms; and you have yet to introduce steam as a cheap and efficient agent in the process of tillage, and in the various mechanical operations of the farm. These works of progress must be manfully encountered, and I predict that new lessons in rural economy and agricultural thrift will be taught by the farmers of this county.

Your example is of inestimable value to the Southern States, alive as they are to-day with agricultural activity, mental and muscular, and earnest in efforts to adapt their husbandry to the new circumstances which imperatively demand change in modes and

processes, in variety of crops and increase of industries, and especially in adopting labor-saving expedients and machines, and acquiring the mastery of the science of farm improvements and renovation. No longer should the planter be migratory, wasting field after field, and seeking new soils to devastate. Recuperation must take the place of destruction, and convenient farm buildings, roads, and other improvements will follow, and serve to foster local attachments and love of home, and to increase the general wealth and advance refinement, and promote the highest type of civilization.

Using their advantage of climate and soil, and following your example of diversifying agricultural industry, the South may yet produce the value of a hundred million dollars, now imported, and increase the industries of the country, the estimated value of which it would be impossible now to compute.

Our nation is entering upon a new era. With increase of area, giving the widest variety to soils and climate, accompanied with immigration from every quarter of the globe, it is daily becoming more a necessity of our condition that new industries should be inaugurated, and new products grown, new processes of utilization attempted, and attention be thus directed from those great industries pursued as specialties, as cotton, or wheat, or whatever promises to reduce the profit of labor by over-production, and which are always foes to scientific agriculture and real improvement.

We are paying tens of millions of dollars annually for fibers, oils, fruits, and other aliments, medicines, and dyes, which can readily be produced here, thus keeping our treasure at home, and giving rural labor a variety and range which will serve better than trades unions or any expedients of combination to keep up the price and improve the condition of the laborer, not alone the laborer upon the farm, but the worker in all the arts of mechanism and fabrication.

It is my earnest desire and deliberate purpose, in my official capacity, and through the Department of the government over which I have been called to preside, to co-operate with you, and with the friends of rural progress everywhere, in all efforts tending to the advancement of a scientific, systematic, rational and practical system of American agriculture, suited to our peculiar wants and circumstances, and not a servile copy of any foreign system, however advanced in its philosophy or valuable its results.

The Department of Agriculture is establishing relations with all organized representatives of agriculture, whether governmental or otherwise, making exchanges of seeds, plants, and publications; it is searching through the world for new and valuable plants to acclimatize, new varieties of cereals to test, and, when proved valuable, to distribute. It is stated on competent local authority that hundreds of thousands of bushels of oats are now grown in a single Western State from seed distributed a few years ago, greatly excelling the common seed in productiveness and in quality. Similar facts, showing an increase of millions of dollars in the production of the country, through the direct agency of the Department, are filed in its archives.

The Department embraces in its work the collection and dissemination of statistics and practical information: chemical analyses of whatever will throw new light upon the mooted questions of progressive agriculture; experimental horticulture, with illustrations of landscape gardening and rural adornment; entomology, with its myriad forms of life, either favorable or inimical to vegetation; botany, with a continental field but partially worked, and promising rich rewards. These and other objects of effort are ever before us, and I believe our working corps are not entirely devoid of appreciation of the importance of efficient service, and are making a good degree of progress in the great work.

In conclusion, allow me to express the pleasure I feel in greeting again my old friends; in witnessing the evidence of your skill and industry, your taste and judgment, your comfortable houses and your improving farms. You have made a desert to bloom as a rose; you have caused much grass to grow where literally none grew before, and are therefore doubly and peculiarly benefactors. Continue to advance; take no step backward; and turn not your backs, you or your children, on so honorable a pursuit, so healthy, and so conducive to virtue and true comfort, as that by which you have already wrought results so beneficial and so substantial.

SOUTHERN AGRICULTURAL CONGRESS.

A circular issued by a joint committee of the Cotton States Mechanics' and Agricultural Fair Association and the Augusta Board of Trade proposes to southern agriculturists the formation of a central organization or "agricultural congress," for the advancement of their interests, including the improvement of the labor system, the encouragement of foreign immigration, and the diversification of the agricultural products

of the South. The initiatory meeting of this general association is appointed at Augusta, Georgia, October 26, 1870, during the fair of the Cotton States Mechanics' and Agricultural Fair Association. State and county agricultural societies are invited to send delegates, and arrangements have been made with railroads to transport these delegates free of charge, or at reduced rates.

THE COTTON CROP OF 1869.

The Charleston Courier makes the following statement concerning the crop of last year:

The summing up of the crop of 1869-'70, as shown by our statement, is 3,203,828 bales, an increase in production of 845,459 bales over 1868-'69. This increase has been mainly absorbed by European countries, as will be seen by the annexed comparative statement of foreign exports for the past two years:

| | 1869. | 1870. |
|------------------------------------|-----------|-----------|
| To Great Britain | 989,491 | 1,478,849 |
| To France | 224,186 | 346,430 |
| To north of Europe, Spain, &c..... | 233,650 | 348,844 |
| Total | 1,447,327 | 2,174,123 |
| | | 1,447,327 |
| Increase..... | | 726,796 |

After making the necessary deductions there is left for home consumption, north and south, 964,642 bales. We have put down for southern consumption 112,000 bales, which includes 12,000 bales taken for consumption in Virginia, and counted in the exports from that State, leaving for northern consumption 852,842 bales, against 840,720 bales in 1869, showing an increase of 12,122 bales.

The value of the crop of the past year (1869-'70) may be put down in round numbers at \$325,000,000. This immense amount of money has been of incalculable benefit to the entire country.

The summing up of the crop, as developed in our statement, exceeds the estimates of the most sanguine in the early part of the past season from a half to three-quarters of a million of bales, which proves the utter fallacy of the many advance statements of growing crops which are heralded throughout Europe and the Northern States for the purpose of affecting prices. Such statements work great injury to the planter as well as to the buyer and consumer.

The disposition, so general on the part of producers, to depreciate the probable production of other crops as well as of cotton is ultimately an injury. "Honesty is the best policy" in marketing a crop. No sane man will make an unconditional estimate in the beginning of the season or until near its close. After the 1st of October, with the present acreage in cotton, an extremely favorable season may give a quarter or even a half million of bales above the average expectations; or a killing frost, unusually early, and bad weather thereafter, may cause an equal reduction. It is yet too early for any authority short of Omnipotence to tell within half a million bales what the present crop will be, even with a knowledge of the precise number and condition of the growing plants, or the exact acreage they occupy.

IXTLE FIBER.

Mr. J. McLeod Murphy, of Harlem, New York, has sent to the Department of Agriculture a package of the dried leaves of this plant, (*Bromelia sylvestris*), which grows abundantly on the southern shores of the Gulf of Mexico; also, a package of the fiber, remarkable for its luster,

strength, and flexibility, without kinking. Referring to a previous letter of his in the Monthly Report of the Department for May, 1869, (p. 232,) he says:

You will observe that inside of the thin envelope which forms the leaf there is a perfect skein of thread of extraordinary tenacity, length, and fineness. The removal of this outer covering or cuticle, when thus dried, can be readily done by a simple chemical process, and the whole fiber made immediately available without other expense. That you may form a better judgment of the plant, I send you also a sample of the fiber, (although of inferior quality, about second or third,) as extracted from the green leaf, (see my previous letter.) My idea is to use all the *refuse* leaves not employed for ropes or textile fabrics for paper stock, cured as shown in the sample, and baled like hay. As I stated in my previous communication, the ixtle plant, though differing widely from its kindred flora, requires but little cultivation, and the leaves, such as I send you, no other care than drying for a few days in the sun.

If a fine quality of paper for banking or other purposes can be made from skeins of thread, the question whether a similar result can be obtained from the ixtle plant is answered. This plant can be brought to New York in quantity for less than \$50 per ton. I state this fact, that it may be contrasted with the price of imported rags.

At all events, I desire to make this record in your Department, and to call attention to this most valuable vegetable product.

WHEAT IN SOUTH CAROLINA.

Lardner Gibbon, of Greenville, in the northwestern part of South Carolina, and at the foot of the Blue Ridge, writes to the Commissioner, date of July 27th, that the damage done to wheat last year by drought in that section caused a larger area than usual to be sown for the present season, and that the harvest has been abundant. He states that Greenville County is admirably adapted to the production of wheat. On a very imperfectly improved old broom-sedge field he has harvested this season 12 bushels of wheat per acre, which is only four-fifths of a bushel less than the average of Pennsylvania in 1868. Wheat is worth \$2 per bushel in Greenville, corn bringing \$1 70, and the facilities of transportation to the seaboard are such as to assure a good market at all seasons. He condemns the practice of planting wheat late, and on ground which has just been exhausted to a large extent by the corn crop, as such growth on impoverished land impairs the vitality of the wheat plant and renders it liable to smut: and the grain being late in forming, it is liable to rust from exposure to warm, sultry rains, which come on with the southwest winds prevalent in June. Wheat in that climate, if sown early, is in no danger of winter killing. The land should be plowed to a good depth in August or September, and the sowing done about the first of October. The roots then obtain a good hold upon the soil; and by top-dressing in mid-winter, with a moderate coat of barn-yard manure, the wheat receives a safe protection against the inclement weather which follows.

CHEESE PRODUCTION.

Mr. T. D. Curtis, of the Utica (New York) Herald, who is conversant with the dairy interest, writes to the Department in response to inquiry, that, "making allowance for old factories discontinued, we think that at least two hundred factories have been added to last year's number in this State alone. In Ohio, Illinois, Iowa, and Wisconsin, large numbers of new factories have opened this season. We have no accurate information as to the number, but it is the opinion of good judges that the

number of cheese factories in the country has been doubled this year. The number of cows, however, has not been materially increased, though a good many have been diverted from butter making to cheese making. In the older dairy regions, the increase in the number of factories has not materially increased the make of cheese. The tendency is to smaller factories and carrying milk shorter distances. Most of the new factories in Central and Northern New York divert patronage from older factories, and absorb private dairies. In the western counties they take cows from butter making. So also in the Western States, which are this year making not only enough cheese for home consumption, but are shipping quite freely for the first time to New York. It is calculated that the new factories this year will add fully one-sixth to the total make of cheese. Last year the weather was favorable, the feed good, and the make the largest ever known. Beginning with a bare market in the spring, we carried over 100,000 boxes, with which we began the season this year. Notwithstanding the complaints of dry weather in June, returns from three hundred and twenty-nine factories in this State showed that up to the 1st of July the make fully equaled that of last year. The yield at the present time is very large, and promises to continue large. The quality is rather inferior to that of last year, and there is justly great complaint about flavor. We have operated this year on a steadily though slowly declining market, which promises to go still lower in view of the large stock on hand, and the probable heavy fall make. There can be no doubt that this year's cheese crop will be the heaviest ever realized. A vastly increased consumption will be necessary to keep up prices, a decline in which would probably be the surest way of increasing consumption, though it would diminish profits."

COTTON AND TOBACCO IN LOUISIANA.

The first open bolls of cotton were brought into Iberia, Louisiana, July 10, others following in regular succession. The first bale of new cotton was received at New Orleans on the 28th of July, an earlier date than any since the war. It was from the plantation of John M'Allen, near Brownsville, Texas. We annex a table of the first receipts at New Orleans, and the receipts to September 1, for a series of years, taken from the New Orleans Price Current :

| Date of receipt of first bale. | Receipts of new crop to Sept. 1. | Total receipts at New Orleans. | Total crop. |
|--------------------------------|----------------------------------|--------------------------------|--------------|
| 1857—August 15 | 33 | 1857-'58..1, 678, 616 | 3, 113, 962 |
| 1858—July 25..... | 4, 834 | 1858-'59..1, 774, 298 | 3, 851, 481 |
| 1859—July 28..... | 9, 698 | 1859-'60..2, 255, 448 | 4, 675, 770 |
| 1860—July 5..... | 36, 670 | 1860-'61..1, 849, 312 | 3, 699, 926 |
| 1861—August 11..... | 61 | 1861-'62.. } 38, 880 | |
| 1862—..... | | 1862-'63.. } 22, 078 | *3, 900, 000 |
| 1863—September 7..... | | 1863-'64.. } 131, 044 | |
| 1864—August 14..... | 12 | 1864-'65.. } 271, 015 | *500, 000 |
| 1865—August 11..... | 22 | 1865-'66.. } 787, 386 | *800, 000 |
| 1866—August 7..... | 133 | 1866-'67.. } 780, 480 | 1, 951, 988 |
| 1867—August 15..... | 19 | 1867-'68.. } 668, 395 | 2, 430, 893 |
| 1868—August 10..... | 476 | 1868-'69.. } 841, 216 | 2, 261, 000 |
| 1869—August 3..... | 267 | | |
| 1870—July 28..... | | | |

Our correspondent at Iberia, Louisiana, sends to the Department a fine specimen of common tobacco, cured and brought in as early as the 14th of July. It is a sample of a crop of four acres.

BEET SUGAR FACTORIES IN CALIFORNIA.

W. Wadsworth, superintendent of the Sacramento Valley Beet Sugar Company, near Sacramento, California, informs the Department that, in preliminary operations carried on in the fall of 1869, using an open shed as a factory, and with merely temporary machinery, at a cost of \$3,000, he obtained 142 pounds of good merchantable sugar from one ton of beets, (being more than 7 per cent.) besides four gallons of inferior sirup. In March of this year he again went to Germany and contracted with Seele & Co., of Brunswick, for 450 tons of machinery, for a factory capable of producing 75 tons of sugar daily; this machinery to be shipped in December. The company will adopt the Roberts's diffusion process.

The Alameda Beet Sugar Company, at Alvarado, of whose inception an account was given in the monthly report of the Department for July, have from 300 to 400 acres in beets. The general appearance of the crop, and the results of saccharine tests of samples taken weekly from the fields, so far give satisfactory evidences of the adaptability of that soil and climate to the production of the sugar beet. The factory of the company is 200 feet in length by 50 in width, and three stories high, erected at a cost of \$20,000; the machinery costing about \$120,000. The superintendent is A. D. Bonesteel, lately proprietor of a beet sugar sugar factory at Fond du Lac, Wisconsin.

CANAL FROM THE MISSISSIPPI TO LAKE BORGNE.

Work is actively progressing on the new canal which is to connect the Mississippi at New Orleans with Lake Borgne and the Gulf of Mexico; and it is stated that the enterprise will be completed by the latter part of next winter. The canal will be 70 feet wide and 12 feet deep, and its lake terminus is to be at Fort Dupries, seven miles distant from the Mississippi. About a thousand feet from that river is to be a lock, 500 feet long by 147 feet wide, and 18 feet deep. For vessels drawing nearly 12 feet the distance between New Orleans and the deep waters of the Gulf will be shortened about 70 miles. Small craft from New Orleans for Mobile and Florida ports will save 15 miles in distance, and the transshipment of many bulky articles will be obviated. The transfer of grain in barges to ships at Ship Island will be facilitated, and it is claimed that the cost of grain transportation will be diminished 5 cents per bushel.

NEW MINERAL FERTILIZER.

A new mineral fertilizer has been discovered in rock of the "Grafton Gold Mine," in Lyman, Grafton County, New Hampshire. About fifty pounds of the material were sent in April, 1869, to Dr. Torrey, United States assayer at New York City, who reported that it was found to con-

tain 40 per cent. of silica, the remainder being nearly all dolomite, or a double carbonate of lime and magnesia. An examination of a sample by Thomas C. Raymond, of Cambridgeport, Massachusetts, gave the following result:

| | |
|-------------------------|--------|
| Silica | 30.3 |
| Protoxide of iron | 6.27 |
| Lime | 20.6 |
| Magnesia | 11.17 |
| Carbonic acid | 32.11 |
| <hr/> | |
| Total | 100.45 |
| <hr/> | |

Several farmers of Grafton County state that by applications of this fertilizer to corn, potatoes, turnips, fruit trees, &c., they have obtained a more rapid growth and a very large increase in yield of crops.

HOME-MADE FERTILIZERS.

A Virginia correspondent of the Department, after expressing his appreciation of the paper on "Bone Fertilizers," in our Monthly Report for July, remarks that few farmers are sufficiently well informed in the principles of chemistry to make a successful application of the waste material on their farms. He adds, that this season he used fine charcoal, sawdust, and Peruvian guano, with gypsum, for potatoes; and in another case substituted wood ashes for the guano. The results were good in the first case, but were better still in the latter. The first-mentioned compost, with an addition of sulphate of soda, was used for cabbages with good results, which would have been greatly enhanced if there had been the requisite amount of moisture in the soil.

FRAUD IN FERTILIZERS.

B. Smith writes to the St. Louis (Missouri) Journal of Agriculture, cautioning the public against a spurious fertilizer sold under the title of "bat manure." He states that the genuine bat manure is about the color of Scotch snuff, and that its weight is about the same as that of bran, bushel for bushel, while the weight of certain materials of slight fertilizing power, which have been vended under the title, is from four to six times as great. In instances which have come under his own inspection he judges the spurious fertilizer to be chiefly composed of clay procured from caves where it has become impregnated to some extent with saltpeter. He has found the genuine bat manure a very effective fertilizer.

MARKET PRICES OF FARM PRODUCTS.*

| Articles. | August. | September. |
|-------------------------------|------------------|------------------|
| NEW YORK. | | |
| Flour—Superfine, State | \$5 30 to \$5 95 | \$5 10 to \$5 45 |
| western | 5 30 to 5 95 | 5 10 to 5 40 |
| Extra, western | 6 15 to 6 25 | 5 45 to 5 65 |
| Wheat—No. 2 spring | | 1 20 to 1 25 |
| No. 3 spring | 1 24 to | 1 11 to |
| Winter red and amber, western | 1 52 to 1 55 | 1 38 to 1 44 |
| Corn—Western, mixed | 95 to 1 00 | 84 to 85½ |
| Yellow | 1 08 to 1 09 | 90 to |
| Oats—Western | 55 to 56 | 50 to 52 |
| State | 64 to 66 | 51 to 57 |
| Hay—Shipping qualities | 85 to 90 | 85 to 90 |
| Prime | | 90 to 1 25 |
| Pork—Mess | 30 25 to 30 50 | 27 87 to 28 25 |
| Prime mess | | 30 00 to 31 00 |
| Beef—Plain mess | 12 00 to 16 00 | 12 00 to 16 00 |
| Extra mess | 16 00 to 19 00 | 16 00 to 19 00 |
| Lard—Prime | 16 to 17½ tierce | 16 to 17½ |
| Butter—Western | 20 to 28 | 20 to 30 |
| State, dairy | 24 to 33 | 24 to 38 |
| Cheese—Dairy | 8 to 14 | 5 to 13 |
| Factory | 10 to 14½ | 5 to 14 |
| Cotton—Low middling, uplands | 19 to | 18½ to |
| Mobile | 19½ to | 19½ to |
| New Orleans | 19½ to | 19½ to |
| Middling, uplands | 20 to | 19½ to |
| Mobile | 20½ to | 20½ to |
| New Orleans | 20½ to | 20½ to |
| Tobacco—Sound lugs, heavy | 9 to 10 | 8 to 8½ |
| Common leaf, heavy | 10½ to 10½ | 9 to 9½ |
| Medium leaf, heavy | 11 to 11½ | 10 to 10½ |
| Wool—Combing, fleece | 55 to 60 | 55 to 60 |
| Extra, pulled | 37 to 42 | 37 to 42 |
| Texas, common, unwashed | 18 to 21 | 23 to 26 |
| CHICAGO. | | |
| Flour—White winter, extras | 7 00 to 8 25 | 6 50 to 8 25 |
| Red winter, extras | 6 03 to 6 75 | 6 00 to 6 75 |
| Spring, extra | 6 00 to 6 50 | 5 50 to 6 25 |
| Spring, superfine | 4 75 to 5 00 | 4 25 to 4 50 |
| Wheat—No. 1 spring | 1 30 to 1 32 | 1 10 to 1 10½ |
| No. 2 spring | 1 23 to 1 30 | 99½ to 1 02½ |
| No. 3 spring | 1 10 to 1 12½ | 90 to 1 03 |
| Corn—No. 1 | | |
| No. 2 | 83½ to 85½ | 64½ to 66 |
| Rejected | 76½ to 78 | 62 to 62½ |
| Oats—No. 1 | | |
| No. 2 | 43 to 45 | 37½ to 38 |
| Rejected | 39 to 40 | 34½ to 35½ |
| Hay—Timothy, pressed | 14 00 to 15 50 | 15 0 to 16 00 |
| Prairie, loose | 11 00 to 14 00 | 10 00 to 13 00 |
| Pork—Prime mess | 25 to 26 | 23 to 25 |
| Mess | 28 to 30 | 27 to 28 |
| Beef—City mess | 13½ to 14½ | 13½ to 14½ |
| Country mess | 11½ to 12½ | 11½ to 12½ |
| Extra mess | 15½ to 16½ | 15½ to 16½ |
| Lard—In tierces | 15½ to 16½ | 15½ to 16 |
| No. 1 | 14½ to 15 | 14½ to 14½ |
| Butter—Choice firkin | 23 to 25 | 24 to 26 |
| Common to medium | 14 to 18 | 16 to 18 |
| Cheese—New York factory | 0 13 to 14 | 0 13½ to 14 |
| Western factory | 11 to 12 | 11½ to 12½ |
| Western reserve | 11 to 12 | 11½ to 12½ |
| Wool—Unwashed, fine | 24 to 28 | 24 to 28 |
| Unwashed, medium and coarse | 27 to 30 | 27 to 30 |
| Tub | 45 to 50 | 45 to 50 |
| CINCINNATI. | | |
| Flour—Family | 6 60 to 7 00 | 5 50 to 5 75 |
| Extra | 6 35 to 6 60 | 5 25 to 5 50 |
| Superfine | 5 75 to 6 10 | 4 50 to 4 75 |
| Wheat—No. 1 white | 1 50 to 1 55 | 1 25 to |
| No. 2 white | 1 40 to 1 45 | 1 20 to 1 25 |
| No. 1 red | 1 33 to 1 35 | 1 15 to 1 16 |
| No. 2 red | 1 28 to 1 30 | 1 12 to |

* Record made as near the first of each month as practical.

† New.

Market prices of farm products—Continued.

| Articles. | August. | September. |
|---|----------------|------------------|
| CINCINNATI—Continued. | | |
| Corn—No. 1..... | — to \$0 90 | \$0 79 to \$0 80 |
| No. 2..... | — to — | — to — |
| Oats—White..... | \$0 50 to 55 | — to — |
| No. 1 mixed..... | 48 to 50 | — to — |
| No. 2..... | 45 to — | — to — |
| New..... | — to — | 40 to 50 |
| Hay—Common..... | 14 00 to 15 00 | 12 00 to 14 00 |
| Loose, pressed..... | 19 00 to 20 00 | 17 00 to 18 00 |
| Pork—City mess..... | 30 00 to 30 50 | 27 50 to 28 00 |
| Prime mess..... | — to — | — to — |
| Lard—Prime steam..... | — to 16 | 15 to 15½ |
| Kettle, in tierces..... | — to 16½ | — to 16 |
| Butter—Choice Ohio..... | 25 to 27 | 28 to 30 |
| Fair to good..... | 20 to 22 | 22 to 25 |
| Cheese—Choice factory..... | 13½ to 14 | 13½ to 14 |
| Western reserve..... | — to — | 10 to 12½ |
| Cotton—Low middling..... | 17½ to 17¾ | 17½ to 18 |
| Middling..... | 18½ to 18¾ | 18½ to 19 |
| Tobacco—Common lugs, West Virginia..... | 4 50 to 6 50 | 4 50 to 6 50 |
| Ohio..... | 5 50 to 6 25 | 5 50 to 6 25 |
| Kentucky..... | 8 00 to 9 50 | 7 50 to 9 50 |
| Wool—Tub-washed..... | 43 to 47 | 44 to 47 |
| Fleece-washed, manufacturing..... | 39 to 42 | 40 to 43 |
| combing..... | 42 to 45 | 42 to 45 |
| Unwashed, manufacturing..... | 27 to 31 | 30 to 31 |
| combing..... | 32 to 34 | 32 to 35 |
| ST. LOUIS. | | |
| Flour—Spring..... | 4 00 to 4 75 | 4 60 to 4 75 |
| Winter..... | 4 60 to 7 00 | 4 75 to 7 25 |
| Wheat—No. 1 red..... | 1 17 to 1 34 | 1 22 to 1 27 |
| No. 2 red..... | 1 16 to — | 1 15 to 1 18 |
| No. 3 red..... | 1 08 to 1 16 | 1 05 to 1 10 |
| White, according to grade..... | 1 10 to 1 40 | 1 00 to 1 40 |
| Corn—No. 2 mixed..... | 62 to — | 76 to 88 |
| Yellow..... | 67 to — | — to — |
| White..... | — to — | 85 to 98 |
| Oats—Mixed, (in gunnies)..... | 38 to — | 42 to 43 |
| No. 2 mixed..... | 35 to — | — to — |
| Hay—Prime, tight-pressed..... | 16 00 to — | 16 00 to — |
| Choice, tight-pressed..... | 17 50 to — | 16 00 to 18 00 |
| Pork—Mess..... | 28 00 to 28 50 | 31 00 to — |
| Lard—Prime steam, (tierces)..... | 15½ to 16 | 16½ to 16¾ |
| Butter—Choice yellow..... | 26 to 29 | 25 to 28 |
| Prime..... | 22 to 25 | 18 to 20 |
| Cheese—Ohio factory..... | 14½ to 14¾ | — to — |
| New York factory..... | 14½ to 15 | — to — |
| Cotton—Middling..... | 17½ to — | 17½ to 18 |
| Tobacco—Factory lugs..... | 5 50 to 6 50 | 6 00 to 7 00 |
| Common leaf..... | 8 75 to 9 50 | 8 75 to 9 75 |
| Medium..... | 9 75 to 10 25 | 10 00 to 11 00 |
| Wool—Tub-washed..... | 36 to 46 | 35 to 45 |
| Fleece-washed..... | 31 to 41 | 30 to 40 |
| Unwashed, combing..... | 33 to 34 | 32 to 33 |
| pulled..... | 30 to 32 | 30 to 32 |
| NEW ORLEANS. | | |
| Flour—Superfine..... | 5 25 to 5 37½ | 5 25 to 5 35 |
| Choice extra..... | 7 25 to 7 75 | 7 00 to 7 75 |
| Corn—Mixed..... | 95 to 1 00 | 80 to 85 |
| White..... | 1 05 to 1 07½ | 92 to — |
| Oats..... | 58 to 64 | 48 to 54 |
| Hay—Fair..... | 23 00 to 24 00 | — to — |
| Prime..... | 25 00 to — | 26 00 to — |
| Choice western..... | 26 00 to — | 28 00 to — |
| Pork—Mess..... | 32 00 to 32 50 | 30 00 to — |
| Beef—Extra mess..... | 13 50 to 15 00 | 13 00 to 13 50 |
| Lard—Choice tierce..... | 17 to 17½ | 17½ to 17½ |
| Butter—Choice western..... | 26 to 28 | 24 to 28 |
| Common northern..... | 30 to 33 | 25 to 30 |
| Cheese—Factory..... | 14 to 16 | 13½ to 14½ |
| Cotton—Low middling..... | 16½ to 17 | 17 to 17½ |
| Middling..... | 17½ to 17¾ | 18 to — |
| Tobacco—Common to good lugs, (heavy)..... | 7½ to 9½ | 7½ to 8½ |
| Medium leaf, (heavy)..... | 10 to 11 | 10 to 10½ |
| Wool—Louisiana..... | 24 to 25 | — to — |
| Mexican..... | 13 to 15 | — to — |

Market prices of farm products—Continued.

| Articles. | August. | | September. | |
|------------------------|---------|-----------|------------|-----------|
| SAN FRANCISCO. | | | | |
| Flour—State..... | \$5 50 | to \$6 50 | \$4 50 | to \$6 00 |
| Oregon..... | 5 50 | to 6 50 | 4 50 | to 6 00 |
| Wheat—State..... | 1 75 | to 1 90 | 1 50 | to 1 70 |
| Oregon..... | 1 80 | to 1 90 | 1 70 | to 1 70 |
| Corn—White..... | 1 40 | to 1 50 | 1 40 | to 1 50 |
| Yellow..... | 1 40 | to 1 50 | 1 40 | to 1 50 |
| Oats..... | 1 50 | to 1 75 | 1 05 | to 1 35 |
| Hay—State..... | 9 00 | to 14 00 | 7 50 | to 13 00 |
| Pork—Mess..... | 25 00 | to 26 00 | 26 00 | to 27 00 |
| Prime..... | 25 00 | to 22 50 | 22 50 | to 23 00 |
| Beef—Mess..... | 15 00 | to 20 00 | 18 00 | to 20 00 |
| Lard—In barrels..... | 15 | to 16 | 15 | to 16 |
| Butter—California..... | 25 | to 35 | 40 | to 47½ |
| Oregon..... | 15 | to 20 | 15 | to 20 |
| Overland..... | 15 | to 20 | 15 | to 35 |
| Cheese..... | 10 | to 15 | 10 | to 17 |
| Wool—Native..... | 14 | to 15 | 13 | to 15 |
| California..... | 18 | to 22½ | 18 | to 21 |
| Oregon..... | 25 | to 26 | 24 | to 26 |

CROPS IN ENGLAND.

Mr. James Sanderson, in his annual harvest report to the London Times, states that on all strong soils, as well as on light soils incumbent on cool subsoils, the wheat crop is considerably over an average, the yield ranging from six bushels to seventy-two bushels per acre. The average product is estimated at thirty bushels to the acre—just the average crop. The acreage sown to wheat is reported as under average, and consequently the total product will fall short of an average yield.

The barley crop, like wheat, is good on deep, cool subsoils. The product is estimated at twenty per cent. below an average. Oats suffered from the drought; the straw is exceedingly short, but the ears comparatively large. The crop is fifteen per cent. under average. The bean crop is one-third deficient. Peas, an average crop.

In many parts of the southern counties the potato crop is inferior, the tubers being few and small. In the chief potato growing counties, however, the yield promises an average; the quality is good, with no symptoms of disease as yet. Mangolds, the most successful root in a dry season, is somewhat late, but the plants are regular and healthy. Turnips, though late, are generally healthy, and with a favorable autumn may prove an average crop.

Hay, in all the southern, midland, and eastern counties, has been nearly a total failure. Pastures, severely scorched.

THE COTTON SEASON OF 1869-'70 IN INDIA.

From the official report of Harry Rivett-Carnac, cotton commissioner, to the Chamber of Commerce, Bombay, we learn that though the area planted in cotton last year in the Central Provinces and the Berars was considerably larger than ever before, the product shows a marked decline. The acreage, compared with that of 1868-'69, was as follows:

| | Aeres, 1868-'69. | Aeres, 1869-'70. |
|-----------------|------------------|------------------|
| Nagpore..... | 298, 764 | 385, 808 |
| Jubbulpore..... | 73, 771 | 78, 251 |

Acres, 1863-'69. Acres, 1869-'70.

| | | |
|-------------------|-----------|-----------|
| Nerbudda..... | 141,751 | 131,271 |
| Chutteesgurh..... | 236,589 | 228,697 |
| East Berar..... | 622,516 | 648,177 |
| West Berar..... | 664,226 | 767,609 |
| | <hr/> | <hr/> |
| | 2,037,617 | 2,239,813 |
| | | <hr/> |
| | | 2,037,617 |
| | | <hr/> |
| Increase..... | | 202,196 |
| | | <hr/> |

In the Central Provinces the increased acreage was 73,152 acres, or 9½ per cent.: in the Berars, 129,044 acres, or about 10½ per cent. In the former provinces cotton occupies about 6½ per cent. of the whole cultivated area, and in the Berars about 30 per cent.

With such an increase in acreage a larger supply of cotton was of course looked for, but unseasonable rains and the boll-worm reduced the product about 23 per cent. below the preceding crop, the exports for the year toward Bombay aggregating only 214,582 bales, against 275,712 bales in 1868-'69. The decrease is pretty evenly distributed over the cotton producing districts, each station showing a falling off in exports. The estimated stock left in the provinces is 8,000 bales.

The commissioner reports great improvement in packing the cotton in the interior. In 1867 the system of pressing was commenced. At first "full pressing" did not make much progress, 2 per cent. only of the crop passing through the full presses. The half presses, however, secured 13 per cent., so that 15 per cent. of the crop was shipped pressed more or less, against 85 per cent. sent to market in loose bags. During the season just closed 59 per cent. of the crop exported went to the full presses, and 35½ per cent. to the half presses, leaving but a small percentage to be sent in the loose bags.

Experiments with exotic plants are reported failures, though the season was deemed favorable to them. Further trial will be given them this season. Much attention has been devoted to the improvement of the indigenous varieties by selection of seed, &c., and various experiments have been tried with manures, deep plowing, &c., with satisfactory results, notwithstanding the unfavorable season. In one instance the combined effect of good seed and deep plowing resulted in a crop of 255 pounds of cleaned cotton to the acre. Ordinary fields, similarly treated, produced 176 pounds to the acre.

The commissioner remarks that deep plowing appears to be of great benefit to the plant, and that those parts of the seed farm which have been thus treated show very favorably by the side of the fields cultivated in the ordinary method. The plants in the well-plowed fields were much stronger and healthier than their neighbors, and while 180 pounds of clear cotton were picked from these fields, the ordinary native fields yielded hardly 50 pounds to the acre. It is proposed to order from England a steam plow for use in the Central India country.

Although the past season has been an unfavorable one, with a large decline in the exports, the commissioner thinks the prospect of the cotton trade in the Central Provinces and the Berars far from discouraging, and that an increased area would be planted for the crop of 1870-'71.

ITEMS FROM VARIOUS SOURCES.

THE CRANBERRY.—A correspondent, who is interested in resuscitating southern agriculture, is anxious to ascertain whether the cranberry (*raccinium macrocarpus*) has ever been noticed as growing wild in Georgia and Florida. It is found in the level, wet lands of the Alleghany Mountains, known as the "Glades," and in the swamps of North Carolina. There are thousands of acres of swamp and glade lands in the southern States suitable for the growth of the cranberry, provided there are no unfavorable climatic influences, and that there is no danger of the plant being choked by the rank growth of grass and coarse aquatic plants.

THE JAPAN PRIVET.—A correspondent in Chatfield, Navarro County, Texas, says: "The Japan privet, (*Ligustrum japonicum*.) recommended in the annual report of the Department of Agriculture for 1868, will prove a mine of wealth to Texas as an inside hedge plant." Its cuttings take root as speedily as the easiest rooting willow twig. It is almost an evergreen, retaining its foliage nine months of the year, even after severe frosts. It is of rapid growth, and must not be confounded with the common privet, (*L. vulgare*.) a small-leaved and much inferior plant. He says the farmers of Texas are better off than before the rebellion. Their lands have doubled in value, and increased attention is paid to introducing improved stock and substituting better farming implements and machinery for the clumsy appliances of former days; and the improvements on their farms generally are of a better character. Increased attention is paid to fruits, and even apples thrive on some soils at 32°; he raised one last year that weighed 17½ ounces, though rabbits and hares girdle the trees badly. Plums succeed admirably, ripening about the middle of June. Peaches, grapes, and all the small fruits likewise do well.

WINE SHIPMENTS—The editor of the Commercial Herald of San Francisco compiles a statement of the California wines and liquors exported from this State to the Eastern States and Europe during the last two and a half years, as follows:

The aggregate shipments of all kinds by the parties named are as follows: Lake Vineyard Wine Company, 155,935 gallons; Eberhardt and Lachman, 63,148 gallons; United Aueheim Wine Growers' Association, 237,600 gallons; Kohler and Frohling, 116,374 gallons; S. Brannan & Co., 47,000 gallons; H. D. Dunn & Co., 1,830 gallons; G. Groezinger, 125,000 gallons. Total, 848,637 gallons.

VINTAGE IN PLEASANT VALLEY.—It is estimated that the present vintage in Pleasant Valley, New York, will yield 7,000 tons of grapes. The Pleasant Valley Wine Company is intending to make 100,000 gallons of wine this fall.

SPARROWS vs. MOSQUITOES.—Among the beneficial results following the introduction of English sparrows into New York, it is stated that a remarkable diminution in the swarms of mosquitoes in that locality is noticed. It is but four years since twenty pairs were imported from England. Care was taken to protect them through the winter, and they have increased with such rapidity that it is estimated there are now five thousand pairs in the parks and gardens of New York, Brooklyn, and Jersey City. They have nearly exterminated the disgusting measuring worm and other insect nuisances that had become so annoying to residents, and which threatened the destruction of the fine shade trees of the latter city.

DOGS vs. SHEEP.—A small flock of choice, highly-valued, Southdown

sheep, owned by George H. Gill, of Kirkwood, Missouri, were all killed by dogs in one night in June.

SALT IN ALAMEDA COUNTY, CALIFORNIA.—Between 600 and 700 tons of salt will be made in this county this season by evaporation from sea water which is run on flats prepared for the purpose.

ARTESIAN WELLS IN LOS ANGELES COUNTY, CALIFORNIA.—In Los Angeles Valley artesian wells are completely successful, water being obtained in great abundance at depths raging from 75 to 200 feet.

GUANO USED IN AUSTRIA.—The following returns for the Austrian empire include the guano used in Hungary: In 1861 it was 12,819 cwt.; in 1862, 13,370 cwt.; in 1863, 18,650 cwt.; in 1864, 35,264 cwt.; in 1865, 45,264 cwt.; in 1866, (the year of the war with Prussia,) 23,846 cwt.; in 1867, 63,446 cwt.; in 1868, 67,684 cwt.; in 1869, 106,514 cwt.

PERUVIAN GUANO.—The total export of Peruvian guano for the year 1869, as shown by custom-house returns at Callao, was 512,757 tons, valued at \$25,000,000. Of this quantity, Belgium took 82,428 tons; England, 196,840 tons; North America, 25,321 tons.

DRAUGHT HORSES FROM EUROPE.—Messrs. Slattery, Russ, and McCourtie, of Iroquois County, Illinois, have imported from France five full-blooded Percheron Norman horses, for the improvement of the stock of that county. Their respective weights range from 1,550 pounds to 1,800 pounds, and their height from 16½ to 17½ hands. Mr. James A. Perry, of the same county, has also imported four full-blooded Percherons, and an English draught horse weighing 1,940 pounds at three years old.

MUSTY OATS.—A South Carolina correspondent, after reporting the loss of a horse, supposed to result from eating musty oats, says: "I am certain more horses die in the South from eating damaged oats than from all other causes. As the oats are cut rather green, and often with many green weeds among them, it is very difficult to keep them from molding more or less in the center. Many animals die from this cause, which are supposed to have had blind staggers, as in the case of mine. Another horse recently died near me in the same way, after being fed on oats mostly sound, but some of the bundles musty in the middle."

METEOROLOGY.

COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY OBSERVERS OF THE SMITHSONIAN INSTITUTION.

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and amount of rain-fall (in inches and tenths) for July and August, 1870, at the stations named. Daily observations at 7 a. m., and 7 and 9 p. m. Tables from reports received up to September 15; notes from reports received up to September 13.

| State and station. | JULY, 1870. | | | | | | AUGUST, 1870. | | | | | |
|----------------------|-------------|------------|-------|------------|------------|------------|---------------|------------|--------|------------|------------|------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. |
| MAINE. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Mount Desert..... | | | | | | | 10, 13 | 85 | 2 | 51 | 70.2 | 4.15 |
| Houlton | 24 | 99 | 2 | 55 | 73.2 | 4.00 | | | | | | |
| Orono..... | 24 | 93 | 1 | 52 | 68.9 | 1.78 | 10, 18 | 87 | 27 | 44 | 66.7 | 3.21 |
| Williamsburg..... | 24 | 95 | 1, 29 | 54 | 69.3 | 2.47 | 9 | 87 | 26, 31 | 52 | 67.2 | 3.15 |
| West Waterville..... | 24 | 95 | 1, 4 | 58 | 73.9 | 1.29 | 9 | 95 | 26 | 52 | 70.1 | 1.90 |
| Gardiner..... | 24 | 89 | 4 | 55 | 71.5 | 2.43 | 9 | 84 | 16 | 53 | 68.4 | 1.99 |
| Lisbon | 23 | 94 | 4 | 53 | 71.4 | 3.27 | 10, 18 | 90 | 27 | 47 | 68.4 | 3.40 |
| Norway..... | 24 | 100 | 4 | 54 | 73.4 | 1.60 | 8, 9 | 90 | 26 | 53 | 69.2 | 1.65 |
| Cornish..... | 24 | 94 | 2, 4 | 56 | 71.9 | 2.74 | 9 | 92 | 27 | 47 | 69.5 | 3.55 |
| Cornishville..... | 24 | 96 | 1 | 57 | 74.0 | 3.25 | 9 | 92 | 27 | 52 | 71.7 | 4.70 |
| Averages | | | | | 71.9 | 2.54 | | | | | 69.0 | 3.08 |
| NEW HAMPSHIRE. | | | | | | | | | | | | |
| Stratford | 24 | 98 | 1 | 52 | 69.1 | 2.47 | 7 | 89 | 27 | 40 | 65.1 | 3.86 |
| Whitefield..... | 24 | 92 | 1 | 50 | 71.0 | 2.47 | 19 | 89 | 27 | 38 | 67.7 | 3.98 |
| Tamworth..... | 24 | 97 | 1 | 53 | 72.8 | 1.62 | 9 | 96 | 27 | 48 | 69.8 | 2.45 |
| Goffstown Center. | 23 | 100 | 1 | 56 | 75.4 | 1.87 | 9 | 101 | 27, 31 | 56 | 73.7 | 1.43 |
| Averages | | | | | 72.1 | 2.11 | | | | | 69.1 | 2.93 |
| VERMONT. | | | | | | | | | | | | |
| Lunenburg | 24 | 89 | 2 | 56 | 72.6 | 4.56 | 9 | 90 | 26 | 48 | 67.8 | 6.42 |
| North Craftsbury. | 24 | 89 | 1 | 48 | 69.6 | 2.66 | 9 | 91 | 26 | 43 | 64.5 | 4.62 |
| Newport..... | | | | | | | 9 | 94 | 27 | 46 | 67.7 | 4.15 |
| East Bethel..... | 24 | 93 | 2 | 50 | 74.1 | 2.11 | 9 | 97 | 27 | 42 | 67.3 | 1.36 |
| Woodstock | 18, 19, 24 | 87 | 1, 2 | 53 | 70.1 | 1.82 | 9 | 88 | 27 | 45 | 65.6 | 1.03 |
| West Charlotte... | 24 | 96 | 1 | 57 | 76.7 | 3.41 | 7, 19 | 96 | 27 | 50 | 73.6 | 3.25 |
| Panton | 24 | 95 | 1 | 58 | 77.8 | 5.25 | 19 | 92 | 26 | 48 | 72.4 | 2.72 |
| Castleton | 24 | 94 | 2 | 55 | 74.5 | 2.89 | 8, 19 | 89 | 27 | 45 | 69.9 | 0.90 |
| St. Albans | 24 | 90 | 1 | 56 | 72.9 | 3.35 | 19 | 88 | 26 | 47 | 68.2 | 4.40 |
| Averages | | | | | 73.5 | 3.28 | | | | | 68.6 | 3.21 |
| MASSACHUSETTS. | | | | | | | | | | | | |
| Kingston | 25 | 94 | 1 | 55 | 72.0 | 2.87 | 7 | 93 | 27 | 52 | 72.0 | 1.37 |
| Topsfield | 24 | 92 | 1 | 57 | 73.4 | 1.41 | 7, 20 | 91 | 27 | 54 | 72.0 | 5.27 |
| Lawrence..... | 24 | 95 | 1 | 57 | 74.4 | 1.55 | 7, 9 | 92 | 27 | 55 | 72.4 | 3.64 |
| Newbury | 23 | 98 | 1 | 56 | 76.0 | | | | | | | |

Table showing the range of the thermometer, &c., for July and August—Continued.

| State and station. | JULY, 1870. | | | | | | AUGUST, 1870. | | | | | |
|--------------------------|-----------------------|------------|---------|------------|------------|------------|---------------------|------------|--------|------------|------------|------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain fall. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain fall. |
| MASSACHUSETTS—Continued. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Georgetown..... | | | | | | | 8 | 97 | 27 | 49 | 73.5 | 7.33 |
| Milton..... | 24 | 97 | 2, 4 | 59 | 74.8 | 1.53 | 4 | 100 | 22 | 55 | 75.6 | 1.33 |
| Cambridge..... | 25 | 94 | 1 | 60 | 76.4 | ..... | 7 | 92 | 27 | 57 | 75.4 | ..... |
| North Billerica..... | 17, 24 | 92 | 1 | 58 | 74.7 | ..... | 7, 9 | 92 | 22, 27 | 53 | 73.3 | ..... |
| West Newton..... | 23, 24 | 100 | 3 | 52 | 77.4 | 1.42 | 7 | 100 | 26 | 57 | 77.1 | 0.56 |
| New Bedford..... | 25 | 99 | 3 | 56 | 70.9 | 2.98 | 5 | 86 | 27 | 53 | 70.6 | 1.65 |
| Worcester..... | 24, 25 | 90 | 4 | 60 | 73.0 | 2.39 | 7 | 88 | 27 | 53 | 71.7 | 2.74 |
| Mendon..... | { 17, 23, 24, 26 } | 88 | 1 | 59 | 73.2 | 2.65 | 7 | 90 | 23 | 56 | 72.2 | 1.75 |
| Lunenburg..... | 24 | 92 | 1 | 58 | 74.4 | 2.17 | 7 | 94 | 27 | 51 | 73.0 | 2.42 |
| Amherst..... | 17, 24 | 91 | 2 | 55 | 73.6 | 2.53 | { 7, 9, 12, 19 } | 91 | 27 | 47 | 71.1 | 2.83 |
| Richmond..... | 17 | 91 | 2 | 58 | 74.1 | 4.25 | | | | | | |
| Williams College..... | 24 | 90 | 2, 4 | 54 | 72.2 | 3.89 | 9 | 94 | 27 | 44 | 69.1 | 5.77 |
| Hinsdale..... | 19, 23, 24 | 86 | 2 | 57 | 71.4 | 4.90 | | | | | | |
| Averages..... | | | | | 73.9 | 2.66 | | | | | 74.2 | 3.07 |
| RHODE ISLAND. | | | | | | | | | | | | |
| Newport..... | 19, 25 | 88 | 3 | 55 | 67.1 | 3.06 | 5 | 84 | 27 | 55 | 75.2 | 2.49 |
| CONNECTICUT. | | | | | | | | | | | | |
| Columbia..... | 17 | 98 | 1, 4 | 60 | 75.0 | 4.05 | | | | | | |
| Middletown..... | 18 | 95 | 4 | 55 | 74.3 | 1.54 | 7 | 97 | 27 | 48 | 73.2 | 3.14 |
| Southington..... | 17, 23 | 95 | 3 | 58 | 74.9 | 1.02 | 7 | 95 | 27 | 54 | 72.9 | 1.73 |
| Colebrook..... | 18, 19 | 91 | 9 | 56 | 72.8 | 3.77 | 7 | 90 | 27 | 51 | 70.3 | 2.73 |
| Brookfield..... | 17 | 95 | 4 | 56 | 74.8 | 3.40 | 25 | 93 | 1, 26 | 60 | 74.7 | ..... |
| Averages..... | | | | | 74.4 | 2.56 | | | | | 72.8 | 2.54 |
| NEW YORK. | | | | | | | | | | | | |
| Moriches..... | 26 | 93 | 3, 4 | 58 | 71.4 | 2.41 | 7 | 88 | 27 | 51 | 69.5 | 5.85 |
| South Hartford..... | 17, 24 | 94 | 2 | 52 | 77.6 | 3.70 | 19 | 93 | 27 | 52 | 75.8 | 1.45 |
| Caldwell..... | 17 | 89 | 2 | 58 | 74.1 | 3.00 | 8 | 87 | 27 | 53 | 71.0 | 6.55 |
| Garrison's..... | 17 | 94 | 3 | 59 | 73.5 | 2.97 | 6, 7, 9, 19 | 90 | 27 | 54 | 73.0 | 1.91 |
| Throg's Neck..... | 17 | 92 | 3 | 53 | 75.9 | ..... | 2 | 83 | 14 | 60 | 75.1 | ..... |
| White Plains..... | 17 | 87 | 3 | 58 | 71.8 | ..... |  |  |  |  |  |  |
| Cooper Union..... | 17 | 95 | 3 | 63 | 77.9 | 4.72 | 7 | 89 | 28 | 63 | 77.3 | 3.79 |
| Flatbush..... | 17 | 97 | 3 | 59 | 81.6 | 2.81 | 2 | 90 | 27 | 57 | 78.5 | 3.06 |
| Brooklyn..... | 17 | 95 | 4 | 62 | 77.4 | 4.00 | 2 | 92 | 27 | 60 | 76.1 | 3.90 |
| Glasco..... | 17 | 99 | 1, 4, 5 | 60 | 75.0 | 1.50 | 18 | 93 | 15 | 50 | 70.0 | 4.40 |
| Newburg..... | 17 | 97 | 3 | 60 | 78.5 | 2.55 | | | | | | |
| Minaville..... | 24 | 97 | 4 | 56 | 75.5 | 3.65 | 19 | 94 | 27 | 49 | 74.6 | 2.30 |
| Cooperstown..... | 24 | 95 | 2 | 55 | 74.9 | 4.11 | 9 | 93 | 27 | 41 | 69.7 | 2.71 |
| Gouverneur..... | 24 | 90 | 1 | 56 | 71.9 | 2.37 | 19 | 88 | 27 | 44 | 68.3 | 1.87 |
| North Hammond..... | 19 | 99 | 1, 9 | 62 | 76.9 | 1.27 | 11 | 100 | 26, 27 | 51 | 76.3 | 2.06 |
| Houseville..... | 20 | 90 | 1, 8 | 55 | 72.8 | 3.95 | 6 | 89 | 26, 27 | 50 | 68.7 | 2.51 |
| Leyden..... | 20 | 88 | 1 | 55 | 70.2 | 3.09 | | | | | | |
| Utica..... | 19, 24 | 94 | 2 | 57 | 75.3 | 6.69 | 8 | 91 | 27 | 43 | 70.8 | 7.26 |
| South Trenton..... | 20 | 94 | 4 | 56 | 73.0 | 6.50 | 9 | 93 | 27 | 45 | 69.1 | 7.01 |
| Cazenovia..... | 20 | 90 | 30 | 58 | 72.0 | ..... | 8 | 88 | 27 | 45 | 68.3 | ..... |
| Oneida..... | 20, 24 | 94 | 1 | 55 | 78.0 | 6.73 | 25 | 93 | 26, 27 | 50 | 70.0 | 14.40 |

Table showing the range of the thermometer, &c., for July and August—Continued.

| State and station. | JULY, 1870. | | | | | | AUGUST, 1870. | | | | | |
|--------------------|--------------------|------------|---------------------|------------|------------|------------|------------------|------------|----------------|------------|------------|------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. |
| NEW YORK—Con. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Depauville..... | 19 | 89 | 1 | 56 | 71.2 | 1.58 | 8, 11 | 92 | 27 | 44 | 70.1 | 1.37 |
| Oswego..... | 20 | 85 | 1 | 57 | 71.4 | 4.72 | 6, 20 | 85 | 27 | 51 | 69.4 | 3.50 |
| Palermo..... | 24 | 92 | 1, 2 | 57 | 72.8 | 3.70 | 8 | 94 | 26 | 52 | 69.6 | 0.50 |
| North Volney.... | 4, 10, 23 | 89 | 1 | 56 | 71.9 | ..... | 8 | 94 | 24, 25 | 51 | 71.4 | ..... |
| Waterburg..... | 26 | 98 | 1, 3 | 54 | 72.4 | ..... | 7 | 95 | 26, 27 | 42 | 69.2 | ..... |
| Nichols..... | 20 | 97 | 3, 8, 22 | 57 | 73.8 | ..... | 25 | 96 | 27 | 44 | 70.7 | ..... |
| Newark Valley.. | 19, 23 | 94 | 8, 9 | 54 | 72.7 | 2.80 | 25 | 92 | 27 | 39 | 66.4 | ..... |
| Himrods..... | 17 | 86 | 1, 3 | 56 | 70.2 | 5.06 | 8 | 90 | 27 | 48 | 65.3 | 1.63 |
| Rochester..... | 23 | 87 | 15 | 58 | 72.6 | 4.72 | | | | | | |
| Little Genesee.. | 23 | 91 | 30, 31 | 52 | 69.7 | 8.86 | { 6, 7, 18, 19 } | 88 | 27 | 40 | 67.5 | 3.21 |
| Suspension Bridge | 17, 23 | 94 | 3, 9 | 56 | 72.1 | 4.25 | 8, 19 | 92 | 27 | 46 | 71.8 | 3.35 |
| Lockport..... | 23 | 87 | 1 | 58 | 71.2 | 2.79 | 8 | 89 | 27 | 51 | 70.3 | 2.52 |
| Buffalo..... | 6 | 90 | 1 | 58 | 72.4 | 3.10 | 7 | 97 | 27 | 46 | 71.7 | 1.58 |
| Averages..... | | | | | 73.9 | 3.84 | | | | | 71.2 | 3.70 |
| NEW JERSEY. | | | | | | | | | | | | |
| Paterson..... | 17 | 98 | 3 | 61 | 77.6 | 3.82 | 11 | 95 | 27, 28 | 56 | 75.5 | 4.43 |
| Newark..... | 17 | 92 | 4 | 56 | 75.6 | 6.97 | 7 | 88 | 27 | 54 | 73.3 | 3.10 |
| Trenton..... | 17 | 97 | 3, 4 | 62 | 82.5 | 3.83 | 9 | 93 | 14, 27 | 60 | 78.3 | 3.93 |
| Rio Grande..... | 18 | 101 | 9 | 63 | 78.9 | 5.88 | 25 | 97 | 27 | 54 | 76.6 | 0.38 |
| Moorestown..... | 17, 18 | 93 | 2, 3 | 60 | 76.8 | 3.51 | 6, 25 | 92 | 27 | 58 | 74.5 | 3.69 |
| New Germantown | 17 | 94 | 3 | 58 | 76.0 | 5.74 | 25 | 95 | 31 | 52 | 73.9 | 2.38 |
| Readington..... | 17 | 96 | 3 | 60 | 76.6 | ..... | 7 | 94 | 16, 29 | 54 | 73.2 | ..... |
| Haddonfield..... | 17 | 95 | 2 | 59 | 77.0 | 3.61 | 6 | 97 | 27 | 58 | 74.5 | 4.72 |
| Newfield..... | 17 | 100 | 3 | 58 | 79.7 | ..... |  |  |  |  |  |  |
| Greenwich..... | 17 | 92 | 3 | 61 | 77.9 | 2.50 | 4, 6 | 89 | 27 | 60 | 75.5 | 9.84 |
| Vineland..... | 17 | 99 | 4 | 60 | 81.3 | 3.04 | 6 | 95 | 14, 27 | 62 | 76.9 | 8.15 |
| Averages..... | | | | | 77.9 | 4.32 | | | | | 75.2 | 4.51 |
| PENNSYLVANIA. | | | | | | | | | | | | |
| Nyces..... | 19 | 92 | 8 | 54 | 72.3 | 2.50 | 18 | 89 | 21, 26 | 50 | 69.1 | 4.50 |
| Hamilton..... | 23 | 94 | 3 | 56 | 76.8 | 3.60 | 6, 25 | 91 | 27 | 48 | 75.0 | 2.31 |
| Fallsington..... | 17 | 95 | 3 | 61 | 77.0 | 4.00 | 2, 3, 25 | 91 | 27 | 59 | 76.0 | 3.90 |
| Philadelphia..... | 17 | 95 | 3 | 61 | 80.1 | 3.50 | 3, 9 | 92 | 27 | 60 | 78.1 | 5.98 |
| Germantown, (M.) | 17 | 97 | 4 | 62 | 77.7 | ..... | 25 | 94 | 27 | 60 | 77.1 | ..... |
| Do.....(T.) | 17 | 94 | 3 | 63 | 78.7 | 11.75 | 6, 9, 25 | 91 | { 16, 27, 28 } | 63 | 76.0 | 3.08 |
| Horsham..... | 17 | 91 | 3 | 58 | 75.4 | 6.21 | 3, 9, 25 | 89 | 27 | 58 | 73.3 | 4.13 |
| Plymouth Meet'g. | 16, 17 | 93 | 3 | 60 | 76.5 | 5.21 | 9, 25 | 89 | 27 | 58 | 73.5 | 5.06 |
| White Hall..... | 16, 17 | 92 | 31 | 57 | 78.2 | ..... |  |  |  |  |  |  |
| Factoryville..... | 24 | 94 | 3, 4, 7, 9 | 60 | 73.7 | 5.23 | 6, 25 | 92 | 27 | 44 | 70.0 | 1.82 |
| Reading..... | 17 | 94 | 3 | 62 | 77.8 | 3.74 | 25 | 91 | 27 | 59 | 75.1 | 5.58 |
| West Chester..... | | | | | | | 6 | 94 | 27 | 57 | 73.6 | 7.66 |
| Parkersville..... | 17, 25 | 94 | 3 | 61 | 78.9 | 3.35 | 6 | 94 | 21, 23 | 63 | 76.2 | 8.15 |
| Tamaqua..... | 17 | 92 | 10 | 51 | 71.0 | 3.20 | 25 | 90 | 26, 27 | 44 | ..... |  |
| Catawissa..... | { 17, 18, 20, 23 } | 93 | 3 | 51 | 73.3 | ..... | 6 | 94 | 22 | 50 | 72.6 | ..... |
| Ephrata..... | 17 | 98 | { 2, 3, 4, 10, 11 } | 62 | 76.8 | 3.83 | 25 | 92 | 14 | 59 | 74.7 | 3.65 |
| Mount Joy..... | 16 | 98 | 4 | 61 | 79.5 | ..... |  |  |  |  |  |  |
| Harrisburg..... | 17 | 99 | 2 | 64 | 80.1 | 2.36 | | | | | | |
| Carlisle..... | 16, 17 | 98 | 3 | 59 | 77.2 | 5.90 | 6, 7, 8 | 93 | 22, 27 | 58 | 74.2 | 2.80 |

Table showing the range of the thermometer, &c., for July and August—Continued.

| State and station. | JULY, 1870. | | | | | | AUGUST, 1870. | | | | | |
|---------------------|--|------------|---|------------|------------|------------|---|------------|--|------------|------------|------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain fall. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain fall. |
| WEST VIRGINIA. | | ° | | ° | ° | <i>In.</i> | | ° | | ° | ° | <i>In.</i> |
| Romney | 17 | 102 | 31 | 66 | 81.8 | ----- | 8 | 100 | 21, 22 | 60 | 77.7 | ----- |
| Weston | $\left. \begin{array}{l} 1, 6, \\ 22, 23, \\ 24, 27, \\ 28 \end{array} \right\}$ | 90 | 31 | 59 | 75.4 | ----- | 9 | 92 | 21, 22 | 58 | 72.7 | ----- |
| Cabell C. H. | 16, 27 | 98 | 31 | 56 | 78.1 | 7.30 | ----- | ----- | ----- | ----- | ----- | ----- |
| Averages | ----- | ----- | ----- | ----- | 78.4 | 7.30 | ----- | ----- | ----- | ----- | 75.2 | ----- |
| NORTH CAROLINA. | | | | | | | | | | | | |
| Goldsboro | 28 | 101 | 9 | 72 | 84.4 | 12.25 | 20, 26 | 99 | 16 | 65 | 82.3 | 6.95 |
| Warrenton | 1 | 94 | 9 | 68 | 81.5 | 5.80 | 12 | 86 | 16 | 62 | 76.5 | 5.00 |
| Oxford | 1 | 96 | 9 | 68 | 80.2 | 5.95 | ----- | ----- | ----- | ----- | ----- | ----- |
| Albemarle | 2, 18, 20 | 98 | 10 | 61 | 81.1 | 3.51 | 26 | 100 | 23 | 58 | 78.3 | 2.13 |
| Statesville | 1 | 94 | 9 | 60 | 76.8 | 7.50 | ----- | ----- | ----- | ----- | ----- | ----- |
| Asheville, (A.) ... | 28 | 87 | 9 | 59 | 73.8 | 6.40 | 26 | 85 | 16 | 63 | 72.4 | 5.60 |
| Do. (H.) ... | 12 | 84 | 9 | 56 | 72.4 | ----- | 20, 25, 26 | 82 | 16 | 62 | 72.0 | ----- |
| Averages | ----- | ----- | ----- | ----- | 78.6 | 6.90 | ----- | ----- | ----- | ----- | 76.3 | 5.07 |
| SOUTH CAROLINA. | | | | | | | | | | | | |
| Aiken | 26, 28 | 96 | 30 | 70 | 82.7 | 2.36 | 20 | 93 | 14, 31 | 70 | 78.8 | 3.22 |
| Gowdeysville | 1, 2, 15 | 94 | 8, 10 | 74 | 82.3 | 5.74 | 25, 26 | 94 | 16 | 68 | 81.3 | 1.75 |
| Bluffton | 28 | 98 | 21 | 75 | 84.8 | 2.00 | 8 | 93 | 2, 3 | 75 | 83.0 | 6.10 |
| Averages | ----- | ----- | ----- | ----- | 83.3 | 3.37 | ----- | ----- | ----- | ----- | 81.0 | 3.36 |
| GEORGIA. | | | | | | | | | | | | |
| Berne | $\left\{ \begin{array}{l} 19, 20, \\ 28 \end{array} \right\}$ | 94 | 14, 24, 31 | 74 | 81.5 | 1.68 | 3 | 90 | 25 | 68 | 78.5 | 1.45 |
| St. Mary's | 19 | 94 | 5, 14, 15 | 74 | 81.5 | ----- | 5, 16, 18 | 90 | 24, 25, 26 | 72 | 81.1 | ----- |
| Penfield | 28 | 98 | 8 | 66 | 82.0 | 1.95 | 26 | 96 | 17, 31 | 71 | 80.2 | 2.00 |
| Averages | ----- | ----- | ----- | ----- | 81.7 | 1.84 | ----- | ----- | ----- | ----- | 79.9 | 1.77 |
| ALABAMA. | | | | | | | | | | | | |
| Rockville | 14 | 98 | 8 | 70 | 83.7 | 6.13 | $\left\{ \begin{array}{l} 8, 25, \\ 27, 28 \end{array} \right\}$ | 91 | 2 | 70 | 81.2 | 4.43 |
| Carlewille | $\left\{ \begin{array}{l} 2, 7, \\ 12, 28 \end{array} \right\}$ | 96 | 15, 17, 23, 30 | 74 | 84.2 | 3.50 | 25 | 98 | 31 | 72 | 82.3 | 8.21 |
| Greene Springs .. | 14 | 95 | 9 | 64 | 79.9 | 7.38 | ----- | ----- | ----- | ----- | ----- | ----- |
| Coatopa | 27 | 96 | 8, 9 | 68 | 81.0 | 5.40 | 28 | 97 | 30 | 72 | 78.1 | 2.50 |
| Fish River | 6, 15 | 91 | 9 | 72 | ----- | ----- | 20 | 92 | 2 | 76 | ----- | ----- |
| Averages | ----- | ----- | ----- | ----- | 82.2 | 5.60 | ----- | ----- | ----- | ----- | 80.5 | 5.05 |
| FLORIDA. | | | | | | | | | | | | |
| Near Port Orange .. | 20, 26 | 89 | $\left\{ \begin{array}{l} 3, 5, 6, \\ 14, 15, \\ 22 \end{array} \right\}$ | 72 | 79.2 | 4.80 | 14 | 82 | 4 | 73 | 80.6 | 2.08 |
| St. Augustine | 3, 13, 18 | 92 | 11 | 72 | 81.5 | 2.50 | 17 | 94 | $\left\{ \begin{array}{l} 1, 10, \\ 12, 21 \end{array} \right\}$ | 76 | 85.3 | 0.40 |
| Jacksonville | 19, 29 | 97 | 4, 14, 16 | 76 | 84.1 | 2.65 | 3, 10, 30 | 94 | 24, 26 | 77 | 84.4 | 4.40 |
| Pilatka | 3, 4 | 98 | 4, 5, 6, 8 | 74 | 82.4 | 4.16 | $\left\{ \begin{array}{l} 1, 2, 7, \\ 11, 12, \\ 20, 28 \end{array} \right\}$ | 96 | 25, 26, 31 | 72 | 82.3 | 1.13 |
| Manatee | 18 | 94 | 23 | 74 | 83.1 | 11.00 | ----- | ----- | ----- | ----- | ----- | ----- |
| Orange Grove | 18, 20, 26 | 92 | 31 | 73 | 82.1 | 8.55 | ----- | ----- | ----- | ----- | ----- | ----- |
| White Spring | $\left\{ \begin{array}{l} 10, 31, \\ 28, 29, \\ 30, 31 \end{array} \right\}$ | 96 | 19, 25 | 73 | 84.4 | ----- | ----- | ----- | ----- | ----- | ----- | ----- |

Table showing the range of the thermometer, &c., for July and August—Continued.

| State and station. | JULY, 1870. | | | | | | AUGUST, 1870. | | | | | |
|------------------------|--------------------|------------|-----------------|------------|------------|------------|------------------|------------|-------------------------------|------------|------------|------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. |
| PENN'A—Con'd. | | | | | | | | | | | | |
| | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Fountain Dale ... | 17 | 94 | 3 | 59 | 77.0 | 3.66 | ----- | ----- | ----- | ----- | ----- | ----- |
| Tioga | 20, 23 | 96 | 9, 11, 22 | 56 | 73.5 | 6.75 | 8 | 94 | 27 | 38 | 69.4 | 4.05 |
| Lewisburg | 17 | 94 | 3 | 58 | 76.2 | 3.99 | 7, 25 | 91 | 27 | 53 | 71.4 | 2.67 |
| Grampian Hills .. | 23 | 93 | { 3, 8, 9, 30 } | 56 | 70.9 | 6.63 | 6, 7, 8, 9 | 90 | 31 | 46 | 68.6 | 3.23 |
| Johnstown | 24 | 92 | 9 | 54 | 73.5 | 4.47 | 7 | 90 | 15, 21 | 51 | 69.9 | 7.93 |
| Franklin | 23 | 95 | 9 | 54 | 73.0 | 11.68 | 8 | 93 | 27 | 48 | 69.9 | 5.96 |
| Pittsburg | 21 | 92 | 9 | 58 | 75.7 | 6.10 | ----- | ----- | ----- | ----- | ----- | ----- |
| Greencastle | 17 | 99 | 3 | 61 | 85.3 | 3.20 | 8 | 97 | 16, 22 | 58 | 78.3 | 6.10 |
| Connellsville | 23 | 98 | 8 | 60 | 77.8 | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| New Castle | ----- | ----- | ----- | ----- | ----- | ----- | 9 | 87 | 27 | 47 | 72.0 | 6.90 |
| Brownsville | 20, 23, 27 | 92 | 30 | 64 | 81.0 | ----- | 5, 8, 25 | 92 | { 6, 15, 16, 17, 22, 23, 30 } | 64 | 79.0 | ----- |
| Beaver | 17 | 92 | 9 | 58 | 74.1 | ----- | 8, 24, 25 | 88 | 21 | 54 | 71.6 | ----- |
| Canonsburg | { 17, 20, 23, 24 } | { 93 } | 9 | 56 | 74.6 | 3.46 | 7, 8 | 91 | 16, 23, 31 | 53 | 71.8 | 3.81 |
| Averages | ----- | ----- | ----- | ----- | 73.1 | 4.46 | ----- | ----- | ----- | ----- | 73.5 | 4.73 |
| DELAWARE. | | | | | | | | | | | | |
| Dover | ----- | ----- | ----- | ----- | ----- | 3.70 | 4, 25 | 92 | 23 | 64 | 79.4 | 3.85 |
| Milford | 27 | 96 | 2, 3 | 62 | 79.6 | 4.30 | ----- | ----- | ----- | ----- | ----- | ----- |
| MARYLAND. | | | | | | | | | | | | |
| Woodlawn | 17 | 95 | 3 | 58 | 77.9 | 4.17 | 2, 20, 25 | 90 | 27 | 58 | 76.0 | 3.83 |
| Annapolis | 17 | 98 | 3 | 64 | 81.2 | 5.41 | 25 | 92 | 23, 27 | 65 | 78.7 | 1.77 |
| Mt. St. Mary's .. | 25, 26, 27 | 91 | 3 | 59 | 76.0 | 3.50 | 3, 8, 25 | 87 | 27 | 58 | 72.7 | 3.28 |
| Averages | ----- | ----- | ----- | ----- | 78.4 | 4.36 | ----- | ----- | ----- | ----- | 75.8 | 2.96 |
| DIST. COLUMBIA. | | | | | | | | | | | | |
| Washington | 17 | 94 | 9 | 67 | 79.5 | 4.80 | 4 | 89 | 27 | 63 | 76.9 | 2.05 |
| VIRGINIA. | | | | | | | | | | | | |
| Johnsontown | 18 | 94 | 4, 8 | 67 | 79.5 | 3.40 | 25 | 95 | 23 | 64 | 77.7 | 0.45 |
| Hampton | 18 | 100 | 8 | 67 | 81.4 | 2.55 | 25 | 98 | 23 | 64 | 79.0 | 2.35 |
| Zuni Station | 16 | 98 | 4, 8 | 72 | 83.1 | 1.78 | ----- | ----- | ----- | ----- | ----- | ----- |
| Surry C. H. | 18, 25 | 100 | 30 | 70 | 85.4 | 2.40 | 10, 25 | 100 | 23 | 65 | 81.9 | 2.00 |
| Comorn | 18 | 94 | 3 | 66 | 79.7 | 2.97 | 25, 29 | 90 | 27 | 64 | 78.2 | 0.81 |
| Vienna | 17 | 93 | 2, 3 | 63 | 77.4 | 7.70 | 25 | 90 | 27 | 57 | 75.1 | 1.50 |
| Fairfax C. H. | 16 | 107 | 8 | 59 | 82.3 | 6.40 | 25 | 95 | 23 | 59 | 74.1 | ----- |
| Piedmont | 17, 28 | 96 | 9, 30 | 64 | 77.7 | 0.85 | 2, 7, 25 | 92 | 14, 21 | 61 | 83.8 | 2.75 |
| Piedmont Station. | 17, 28 | 95 | 3, 11 | 62 | 76.6 | 0.80 | 25 | 93 | 16, 22 | 60 | 74.7 | 2.35 |
| Staunton | 17, 28 | 89 | 31 | 64 | 75.1 | 4.33 | ----- | ----- | ----- | ----- | ----- | ----- |
| Lexington | 17 | 99 | 8, 9, 10 | 66 | 79.5 | 4.56 | 10 | 98 | 23 | 60 | 77.2 | 3.15 |
| Lynchburg | 17 | 91 | 10 | 66 | 78.5 | ----- | 25 | 90 | 23 | 64 | 76.3 | 1.25 |
| Near Wytheville .. | 28 | 86 | 9 | 57 | 74.1 | 2.50 | { 7, 8, 25, 28 } | 84 | 16 | 62 | 72.3 | 7.60 |
| Averages | ----- | ----- | ----- | ----- | 79.3 | 3.35 | ----- | ----- | ----- | ----- | 77.3 | 2.42 |

Table showing the range of the thermometer, &c., for July and August—Continued.

| State and station. | JULY, 1870. | | | | | | AUGUST, 1870. | | | | | |
|----------------------|------------------------------------|------------|------------------------------|------------|------------|------------|---------------|------------|-------------|------------|------------|------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. |
| FLORIDA—Cont'd. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Newport..... | 27, 31 | 91 | 9 | 70 | 79.9 | 2.77 | 9, 19 | 93 | 2, 8, 12 | 73 | 80.2 | 2.65 |
| Chattahoochee.... | 11, 12 | 96 | 6 | 72 | 80.1 | 3.20 | 9 | 95 | 24 | 70 | 84.0 | 5.50 |
| Averages..... | | | | | 82.5 | 5.08 | | | | | 82.8 | 2.69 |
| TEXAS. | | | | | | | | | | | | |
| Clarksville..... | 2 | 93 | 9 | 72 | 83.0 | | 21 | 88 | 31 | 70 | 82.3 | |
| Gilmer..... | 16, 17, 18 | 98 | 8 | 71 | 83.0 | 9.30 | | | | | | |
| Oakland..... | 7, 29 | 98 | 31 | 72 | 83.7 | 1.87 | 16 | 96 | 7 | 74 | 82.6 | 4.44 |
| Blue Branch, (W) | 18 | 94 | 10 | 67 | 80.2 | 1.70 | | | | | | |
| Do..... (G) | 7, 17 | 95 | 7 | 72 | 80.8 | 2.70 | | | | | | |
| Lavaca..... | { 7, 8, 10, 11, 12, 13, 17 } | 93 | { 21, 26, 30, 31 } | 76 | 83.2 | 5.90 | 16 | 96 | 1 | 78 | 84.0 | 1.90 |
| Bluff..... | 11, 16, 17 | 95 | 22, 29 | 74 | 82.9 | 4.95 | 22, 23 | 94 | 1, 2, 7, 10 | 76 | 82.8 | 1.98 |
| Clinton..... | { 7, 8, 13, 17, 18 } | 96 | 20 | 70 | 82.4 | 5.75 | 21 | 94 | 3 | 70 | 80.7 | 2.45 |
| Austin..... | { 3, 7, 13, 14, 15, 16, 17 } | 95 | 8, 31 | 71 | 82.2 | 2.04 | 22 | 96 | 26, 31 | 72 | | |
| Lockhart..... | 16, 17 | 95 | 26 | 74 | 83.8 | 4.50 | 21, 22 | 92 | 30, 31 | 74 | 81.6 | |
| San Antonio..... | 17 | 101 | 4 | 71 | 79.8 | 3.72 | 2 | 99 | 31 | 73 | 82.6 | 6.48 |
| Averages..... | | | | | 82.3 | 4.24 | | | | | 82.4 | 3.45 |
| LOUISIANA. | | | | | | | | | | | | |
| New Orleans..... | 9 | 93 | 25 | 71 | 79.8 | 6.00 | 20 | 92 | 31 | 73 | 80.6 | 5.40 |
| Shreveport..... | 13 | 94 | 9 | 73 | 83.4 | | 20, 23 | 92 | 30 | 70 | 81.2 | |
| Cheneyville..... | 15 | 93 | 2, 19 | 73 | 81.2 | | 21, 22 | 91 | 20, 31 | 74 | 82.0 | |
| Averages..... | | | | | 81.5 | 6.00 | | | | | 81.3 | 5.40 |
| MISSISSIPPI. | | | | | | | | | | | | |
| Columbus..... | 14 | 97 | 9 | 68 | 82.1 | 4.66 | 10, 27, 29 | 92 | 31 | 69 | 80.7 | 5.81 |
| Enterprise..... | { 8, 10, 12, 13 } | 101 | { 10, 11, 17, 25, 28 } | 73 | 86.5 | 3.30 | | | | | | |
| Philadelphia..... | 13, 14, 15 | 94 | 8 | 68 | 79.9 | 4.60 | 19, 20 | 92 | 1, 6 | 70 | 71.7 | 2.90 |
| Grenada..... | 16 | 95 | 5, 9 | 65 | 80.2 | 7.55 | 10, 19, 25 | 94 | 31 | 62 | 79.2 | 3.85 |
| Brookhaven..... | 16 | 95 | 25 | 70 | 81.1 | 5.20 | 20 | 91 | 31 | 70 | 77.7 | 5.40 |
| Near Brookhaven. | { 1, 11, 12, 13, 15 } | 98 | 25 | 68 | 81.1 | 9.20 | 26 | 95 | 31 | 70 | 80.0 | 9.10 |
| Holly Springs..... | 25, 27, 29 | 94 | 16 | 61 | 79.9 | 0.90 | | | | | | 2.20 |
| Averages..... | | | | | 81.5 | 5.06 | | | | | 77.9 | 4.88 |
| ARKANSAS. | | | | | | | | | | | | |
| Helena..... | 16 | 94 | 8 | 68 | 81.8 | | 13, 19, 22 | 90 | 30 | 69 | 81.4 | |
| Mineral Springs..... | | | | | | | 3 | 92 | 31 | 60 | 78.1 | 4.63 |
| Averages..... | | | | | 81.8 | | | | | | 79.8 | 4.63 |
| TENNESSEE. | | | | | | | | | | | | |
| Elizabethton..... | 15 | 94 | 9 | 58 | 77.2 | 2.71 | 8, 25, 26 | 92 | 16, 23 | 64 | 76.7 | 4.09 |
| Tusculum Coll'ge. | 26 | 90 | 8 | 62 | 78.2 | | | | | | | |
| Knoxville..... | 23 | 91 | 7 | 65 | 78.3 | 3.50 | 25 | 91 | 31 | 66 | 76.7 | 3.85 |

Table showing the range of the thermometer, &c., for July and August—Continued.

| State and station. | JULY, 1870. | | | | | | AUGUST, 1870. | | | | | |
|--------------------|------------------------------|------------|-----------|------------|------------|------------|------------------------|------------|-----------------------|------------|------------|------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. |
| TENNESSEE—CON. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Lookout Mount'n | 25, 27 | 93 | 8 | 70 | 80.5 | ..... | 26 | 91 | { 1, 16, 17, 31 } | 72 | 78.7 | ..... |
| McMinnville | 27 | 92 | 8 | 62 | 76.3 | ..... | 8, 25, 27 | 88 | 31 | 65 | 75.2 | ..... |
| Austin | 27 | 92 | 7 | 64 | 78.4 | 7.08 | { 8, 23, 24, 26 } | 90 | 30 | 58 | 79.0 | 4.06 |
| Clarksville | 16 | 88 | 9 | 62 | 76.0 | 5.97 | 23 | 88 | 31 | 62 | 74.8 | 4.28 |
| Trenton | 27 | 96 | 8 | 62 | 80.8 | 1.80 | 7, 8 | 95 | 30, 31 | 60 | 79.2 | 3.40 |
| La Grange | 15 | 99 | 7, 8 | 71 | 83.5 | 1.90 | 12 | 94 | 31 | 66 | 79.5 | 5.00 |
| Averages | | | | | 78.8 | 3.83 | | | | | 77.5 | 4.11 |
| KENTUCKY. | | | | | | | | | | | | |
| Pine Grove | { 17, 18, 24, 25, 28 } | 92 | 30 | 62 | 77.5 | 4.85 | { 6, 7, 8, 24, 25 } | 90 | 21, 31 | 60 | 74.2 | 4.84 |
| Shelby City | 17 | 92 | 8 | 66 | 78.7 | 5.66 | | | | | | |
| Near Louisville | 27 | 96 | 8, 30 | 57 | 78.9 | 3.28 | 8, 25 | 96 | 30 | 52 | 76.7 | 2.22 |
| Averages | | | | | 78.4 | 4.56 | | | | | 75.4 | 3.53 |
| OHIO. | | | | | | | | | | | | |
| Salem | 16, 24 | 92 | 8 | 60 | 75.8 | 3.17 | 8 | 92 | 27 | 56 | 74.6 | 4.20 |
| Steubenville | 17 | 92 | 9 | 60 | 77.2 | 4.83 | 25 | 89 | 21 | 56 | 74.4 | 2.82 |
| Painesville | 17 | 90 | 2 | 57 | 71.2 | 12.13 | 9 | 87 | 27 | 50 | 70.8 | 3.19 |
| Gilmore | 17 | 103 | 2 | 63 | 74.7 | 2.60 | | | | | | |
| Milnersville | 20 | 93 | 9, 11, 30 | 60 | 75.7 | 4.90 | | | | | | |
| Cleveland | 23 | 91 | 3 | 56 | 72.3 | 10.15 | 19 | 89 | 26 | 50 | 70.3 | 2.00 |
| Wooster, (H.) | 17 | 101 | 4 | 61 | 75.4 | ..... | 8 | 101 | 22, 27, 30 | 59 | 76.9 | ..... |
| Do. (W.) | 17 | 100 | 8, 29 | 64 | 78.9 | ..... | 24 | 98 | 30 | 50 | 75.8 | ..... |
| Pennsville | 18, 28 | 96 | 8 | 61 | 80.6 | 3.75 | 6 | 93 | 27 | 54 | 74.5 | 2.10 |
| Gallipolis | 27, 28 | 96 | 9 | 58 | 78.4 | 2.99 | 8 | 96 | 17, 22 | 58 | 75.0 | 5.23 |
| Adams Mills | 17 | 94 | 9 | 59 | 77.8 | 3.79 | 8 | 94 | 22 | 55 | 75.0 | 2.58 |
| Oberlin | 16, 17, 23 | 96 | 2 | 56 | 74.1 | 8.90 | 7, 24 | 92 | 27 | 50 | 71.2 | 1.55 |
| Kelley's Island | 23 | 92 | 2, 30 | 64 | 76.6 | 6.32 | 24 | 88 | 26 | 58 | 75.5 | 1.52 |
| Sandusky | 17 | 93 | 8, 9 | 62 | 75.4 | 5.28 | 23 | 91 | 26 | 53 | 73.3 | 1.72 |
| North Fairfield | 17 | 93 | 9 | 59 | 74.5 | 4.47 | 24 | 92 | 27 | 52 | 72.9 | 1.25 |
| Carson | | | | | | | 24 | 92 | 26 | 56 | 74.7 | 2.10 |
| Gambier | 27 | 90 | 30 | 58 | 73.6 | 4.12 | | | | | | |
| Westerville | 25, 27 | 98 | 8, 29 | 58 | 77.2 | 3.33 | 8 | 96 | 22 | 56 | 74.3 | 1.83 |
| North Bass Island | 20 | 96 | 8 | 61 | 75.5 | 7.00 | 18 | 92 | 26 | 60 | 75.2 | 1.37 |
| Marion | 26 | 94 | 8 | 59 | 76.2 | 2.43 | 24 | 93 | 24, 27 | 55 | 72.8 | 1.70 |
| Hillsboro | 24, 27, 28 | 90 | 8, 30 | 59 | 75.5 | 2.83 | 8 | 90 | 21 | 56 | 72.6 | 3.54 |
| Bowling Green | 17 | 101 | 29 | 57 | 78.0 | 6.55 | 24 | 96 | 20 | 51 | 75.1 | 3.85 |
| Kenton | 20, 23, 25 | 104 | 15, 30 | 70 | 84.2 | 3.63 | 8 | 96 | 22, 27 | 68 | 77.1 | 1.90 |
| Bellefontaine | | | | | | | 6 | 92 | 12, 25 | 59 | 72.9 | 3.40 |
| Urbana | 27 | 95 | 29, 30 | 60 | 76.3 | 2.63 | 24 | 95 | 22, 23 | 58 | 73.1 | 2.34 |
| Springfield | 24, 27 | 95 | 29, 30 | 65 | 78.9 | 3.10 | | | | | | |
| Bethel | { 17, 23, 24, 27 } | 94 | 30 | 56 | 77.1 | 3.25 | 8 | 94 | 20, 30 | 58 | 74.7 | 3.63 |
| Jacksonburg | 17 | 94 | 8, 29 | 62 | 77.4 | 6.65 | 6 | 92 | 21 | 58 | 74.7 | 2.20 |
| Mt. Auburn Inst. | 27 | 95 | 8 | 66 | 80.4 | 2.38 | 24 | 93 | 26 | 61 | 77.0 | 0.56 |
| Cincinnati, (P.) | 17 | 100 | 30 | 65 | 82.7 | 3.21 | 7 | 95 | { 16, 21, 27, 31 } | 64 | 77.5 | 1.10 |
| College Hill | 17, 27 | 97 | 8 | 65 | 84.0 | 1.88 | 8, 24 | 97 | 21 | 62 | 78.7 | 1.06 |
| Averages | | | | | 77.1 | 4.68 | | | | | 74.5 | 5.05 |

Table showing the range of the thermometer, &c., for July and August—Continued.

| State and station. | JULY, 1870. | | | | | | AUGUST, 1870. | | | | | |
|---------------------|-----------------------|------------|------------------|------------|------------|------------|---------------|------------|--------------------|------------|------------|------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. |
| MICHIGAN. | | | | | | | | | | | | |
| | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Detroit | 20 | 94 | 8 | 58 | 74.1 | 6.21 | 1, 6 | 91 | 26, 27 | 55 | 72.5 | 2.20 |
| Monroe City | 5 | 99 | 29 | 62 | 78.3 | 9.13 | 24 | 98 | 13, 26 | 60 | 77.5 | 2.20 |
| Ann Arbor | 17 | 94 | 8 | 57 | 74.3 | 6.36 | 24, 28 | 90 | { 13, 20, 25, 27 } | 56 | 70.8 | 1.36 |
| Alpena | 25 | 83 | 1, 8 | 56 | 67.2 | 3.29 | 4, 17 | 82 | 26 | 50 | 66.4 | 2.57 |
| State Ag'l College | 16 | 93 | 2 | 59 | 74.4 | 8.02 | 1, 5, 6 | 90 | 27, 30 | 51 | 70.1 | 4.53 |
| Litchfield | 17 | 90 | 8 | 56 | 71.7 | 7.63 | 24 | 89 | 14 | 50 | 69.5 | 1.86 |
| Coldwater | 22 | 94 | 8 | 53 | 73.1 | 4.25 | 24 | 92 | 27 | 45 | 69.0 | 1.44 |
| Grand Rapids, (H.) | 23 | 99 | 7 | 58 | 76.6 | 0.76 | 24 | 90 | 20 | 50 | 74.3 | 1.61 |
| Do.....(S.) | 23 | 92 | 8 | 57 | 73.1 | 5.55 | | | | | | |
| Northport | 10 | 86 | 2, 13, 14 | 54 | 68.5 | 10.88 | 11 | 82 | 26 | 50 | 66.1 | 6.13 |
| Pleasanton | 23 | 88 | 7 | 52 | 69.4 | 9.50 | | | | | | |
| Muskegon | { 15, 17, 21 } | { 93 } | 8 | 58 | 79.4 | 0.50 | 24 | 90 | 27 | 52 | 73.7 | 5.00 |
| Otsego | 22 | 105 | 31 | 50 | 74.1 | | 23 | 103 | 31 | 53 | 68.2 | |
| Copper Falls | 18 | 86 | 1, 13, 20 | 50 | 61.5 | 2.00 | 2 | 79 | 11 | 47 | 61.1 | 3.41 |
| Ontonagon | 15, 16 | 90 | 5, 6, 7 | 55 | 69.0 | | 3, 4 | 78 | 11, 19, 31 | 54 | 62.6 | |
| Averages | | | | | 72.3 | 5.70 | | | | | 69.4 | 2.94 |
| INDIANA. | | | | | | | | | | | | |
| Aurora | { 1, 15, 24, 25 } | 100 | 30 | 60 | 79.0 | 3.07 | | | | | | |
| Vevay | 27 | 93 | 9 | 61 | 77.9 | 3.20 | 8 | 94 | 30, 31 | 59 | 75.4 | 2.55 |
| Mount Carmel | 17, 24 | 96 | 29 | 61 | 77.7 | 3.04 | 24 | 94 | 14, 21 | 60 | 75.2 | 1.55 |
| Spiceland | 27 | 96 | 8 | 61 | 78.3 | 3.15 | | | | | | |
| Laconia | 27 | 95 | 8 | 66 | 78.1 | 3.80 | 24 | 92 | 30 | 60 | 75.0 | 4.71 |
| Columbia City | 27 | 96 | 30 | 58 | 77.2 | 5.56 | 24 | 94 | 27 | 52 | 74.0 | 2.38 |
| Knightstown | 27 | 98 | 8 | 61 | 79.0 | 1.16 | 24 | 96 | 30 | 57 | 67.3 | 1.77 |
| Warsaw | { 17, 19, 20, 27 } | { 90 } | { 2, 8, 21, 30 } | 70 | 79.8 | 5.65 | | | | | | 1.40 |
| Indianapolis | 26 | 92 | 30 | 61 | 77.4 | 2.84 | 24 | 89 | 21 | 58 | 72.8 | 2.97 |
| Near La Porte | 25 | 98 | 2, 7, 29 | 62 | 77.3 | 5.23 | 24 | 96 | 26 | 56 | 72.9 | 1.83 |
| Rensselaer | 25 | 98 | 7 | 60 | 79.0 | 5.10 | 24 | 94 | 13 | 55 | 73.5 | 2.80 |
| Merom | 24 | 98 | 8 | 62 | 83.1 | 1.60 | | | | | | |
| Kentland | 20, 27 | 91 | 2, 4, 9 | 60 | 73.2 | 3.59 | | | | | | |
| New Harmony | { 1, 18, 21, 23, 27 } | { 93 } | 8 | 66 | 80.5 | 7.00 | 8, 24 | 92 | 31 | 63 | 76.5 | 5.17 |
| Harveysburg | 21 | 96 | 8 | 58 | 72.0 | 3.70 | 7, 23, 24 | 90 | 13 | 50 | 70.6 | 3.00 |
| Averages | | | | | 78.0 | 3.84 | | | | | 73.3 | 2.74 |
| ILLINOIS. | | | | | | | | | | | | |
| Chicago | 24 | 100 | 8 | 61 | 78.9 | 3.71 | 24 | 96 | 19, 20, 30 | 60 | 75.0 | 2.07 |
| Near Chicago | 22 | 100 | 7 | 60 | 79.0 | | 24 | 98 | 13, 19 | 56 | 74.1 | |
| Evanston | 22 | 94 | 2 | 56 | 75.1 | 4.26 | 24 | 92 | 13 | 58 | 71.1 | 2.28 |
| Marengo | 19 | 96 | 8 | 53 | 74.2 | 4.66 | 24 | 92 | 20 | 48 | 68.6 | 3.79 |
| Charleston | 27 | 94 | 30 | 63 | 78.2 | 4.40 | 1 | 92 | 13 | 56 | 72.0 | 4.34 |
| Mattoon | { 21, 25, 27 } | { 92 } | 30 | 60 | 78.8 | 2.38 | 24 | 90 | 13 | 58 | 73.7 | 3.61 |
| Aurora | 4, 22 | 95 | 7 | 57 | 76.2 | 5.50 | 24 | 92 | 13 | 51 | 69.9 | 3.31 |
| Louisville | 21 | 98 | 4 | 62 | 80.8 | 6.30 | 20 | 98 | 30 | 60 | 75.7 | 5.10 |
| Golconda | 18, 22 | 102 | 9 | 52 | 80.5 | 1.50 | 4 | 100 | 15 | 60 | 82.8 | 2.50 |
| Belvidero | 26 | 94 | 30 | 59 | 75.2 | 4.40 | 24 | 95 | 20, 27 | 53 | 69.7 | 2.61 |
| Ottawa | 25 | 105 | 2 | 60 | 83.4 | 1.90 | 24 | 99 | 13 | 55 | 72.6 | 2.26 |
| Decatur | 20, 21 | 93 | 30 | 61 | 78.9 | 1.50 | 1 | 92 | 13 | 55 | 72.6 | 4.00 |
| Pana | 21 | 94 | 30 | 62 | 78.5 | 3.50 | | | | | | |
| Winnebago | 19 | 95 | 8 | 57 | 76.1 | 3.74 | 24 | 93 | 19 | 51 | 70.2 | 3.74 |

Table showing the range of the thermometer, &c., for July and August—Continued.

| State and station. | JULY, 1870. | | | | | | AUGUST, 1870. | | | | | |
|---------------------|------------------------------|------------|---|------------|------------|------------|---------------|------------|--------|------------|------------|------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. |
| ILLINOIS—Cont'd. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Wyanet..... | 25 | 105 | 30 | 52 | 84.9 | 1.91 | | | | | | |
| Tiskilwa..... | 17, 25 | 102 | 7, 30 | 53 | 73.6 | | | | | | | |
| Hennepin, (S.)..... | 25 | 102 | 30 | 52 | 73.0 | | 1, 24 | 94 | 14, 20 | 50 | 71.0 | |
| Do.....(O.)..... | 17 | 105 | 30 | 54 | 80.1 | | 1 | 97 | 14, 20 | 53 | 74.1 | 1.25 |
| Elmira..... | 16, 20 | 100 | 7 | 53 | 80.1 | 0.66 | 5 | 93 | 13 | 52 | 71.0 | 3.15 |
| Peoria..... | 25 | 101 | 30 | 61 | 81.3 | 0.63 | 24 | 94 | 13 | 56 | 74.0 | 3.26 |
| Springfield..... | 22, 25 | 102 | 1, 8 | 64 | 81.7 | | 24 | 95 | 25, 26 | 60 | 74.7 | |
| Dubois..... | 21 | 101 | 30 | 61 | 79.0 | 2.12 | 6, 24 | 94 | 4 | 59 | 76.9 | 3.23 |
| Galesburg..... | { 20, 21, 25, 26, 27 } | 96 | 7 | 61 | 80.0 | 1.10 | 23, 24 | 89 | 13, 26 | 58 | 72.0 | 3.70 |
| Manchester..... | 22 | 101 | 7 | 69 | 79.7 | 4.55 | 1 | 97 | 30 | 54 | 73.3 | 5.22 |
| Mount Sterling .. | 14 | 95 | 7 | 66 | 82.8 | 3.50 | 23 | 80 | 13 | 55 | 73.5 | 5.00 |
| Andalusia..... | 19, 22 | 98 | 30 | 54 | 79.0 | | 24 | 87 | 26 | 53 | 70.9 | |
| Ogawka..... | 20 | 103 | 8 | 59 | 80.6 | 2.70 | | | | | | |
| Augusta..... | 17, 19, 20 | 95 | 7 | 59 | 79.5 | 2.01 | 5, 24 | 88 | 13 | 53 | 72.6 | 3.41 |
| Warsaw..... | 16, 25, 27 | 100 | 30 | 62 | 79.4 | 1.38 | 4 | 97 | 13 | 54 | 71.2 | 5.23 |
| Averages..... | | | | | 79.3 | 2.85 | | | | | 72.5 | 3.58 |
| WISCONSIN. | | | | | | | | | | | | |
| Sturgeon Bay..... | 10, 16, 26 | 87 | 13 | 54 | 71.4 | 5.30 | 4 | 85 | 26 | 55 | 67.6 | 5.25 |
| Manitowoc..... | 26 | 93 | 7 | 54 | 70.6 | 4.20 | 4, 17 | 87 | 20 | 52 | 67.8 | 5.73 |
| Hingham..... | 26 | 92 | 8 | 54 | 71.9 | | 24 | 92 | 15, 27 | 54 | 69.6 | |
| Milwaukee..... | 26 | 96 | 30 | 52 | 72.4 | 4.64 | 24 | 92 | 27 | 49 | 69.0 | 2.69 |
| Geneva..... | 23 | 96 | 30 | 58 | 74.1 | 3.23 | 24 | 97 | 20 | 53 | 70.1 | 2.35 |
| Waupacca..... | 22 | 95 | { 1, 6, 7, 8, 13, 14, 15, 23, 29 } | 60 | 73.1 | | 1, 4, 18 | 89 | 19 | 52 | 64.5 | |
| Embarrass..... | 18, 22 | 92 | 2, 8, 31 | 52 | 70.5 | 8.53 | 18 | 86 | 26 | 46 | 65.3 | 9.86 |
| Rocky Run..... | 23, 26 | 91 | 29 | 58 | 77.5 | 7.00 | 24 | 90 | 13, 20 | 53 | 68.4 | 6.63 |
| Madison..... | 23, 26 | 91 | 7 | 58 | 73.8 | 5.25 | 24 | 89 | 20 | 56 | 67.1 | 3.65 |
| Edgerton..... | 18, 22 | 100 | 8 | 59 | 77.2 | 6.80 | 24 | 96 | 20 | 50 | 72.0 | 4.30 |
| Mosinee..... | 18 | 93 | 7 | 52 | 69.3 | 16.32 | 4, 18 | 87 | 20 | 35 | 63.3 | 16.65 |
| Baraboo..... | 3, 19, 22 | 98 | 2, 7 | 60 | 76.2 | 3.63 | 4 | 96 | 13, 26 | 54 | 71.1 | 6.87 |
| Tunnel City..... | 3 | 93 | 4 | 50 | 69.9 | 10.30 | 24 | 92 | 19, 20 | 43 | 67.8 | 11.70 |
| Bayfield..... | 24 | 98 | 3, 29 | 54 | 69.7 | | 15 | 86 | 20 | 50 | 64.3 | |
| Averages..... | | | | | 72.7 | 6.84 | | | | | 67.7 | 6.79 |
| MINNESOTA. | | | | | | | | | | | | |
| Afton..... | 19 | 96 | 7 | 58 | 72.9 | 6.23 | | | | | | |
| St. Paul..... | | | | | | | | | | | | |
| Minneapolis..... | 23 | 96 | 29 | 56 | 72.9 | 3.85 | 1 | 90 | 19 | 46 | 65.5 | 6.02 |
| Sibley..... | 19 | 97 | 8 | 55 | 73.1 | 1.74 | 4 | 92 | 12 | 42 | 67.5 | 5.61 |
| Koniska..... | 12 | 89 | 23 | 54 | 69.4 | 3.30 | | | | | | |
| Litchfield..... | 19 | 94 | 6 | 56 | 72.7 | 2.50 | 4 | 90 | 20 | 43 | 65.4 | 3.70 |
| New Ulm..... | 19 | 100 | 6, 30 | 58 | 75.5 | 2.44 | 4 | 100 | 12 | 46 | 67.6 | 6.95 |
| Madelia..... | 19 | 99 | 6 | 55 | 77.9 | 3.05 | 22 | 95 | 19 | 44 | 63.8 | 2.95 |
| Averages..... | | | | | 73.5 | 3.30 | | | | | 67.0 | 5.09 |

Table showing the range of the thermometer, &c., for July and August—Continued.

| State and station. | JULY, 1870. | | | | | | AUGUST, 1870. | | | | | |
|---------------------|------------------------------|------------|----------|------------|------------|------------|---------------|------------|------------|------------|------------|------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. |
| IOWA. | | | | | | | | | | | | |
| | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Clinton | 26 | 97 | 12 | 58 | 77.9 | 3.00 | 24 | 94 | 14, 26, 30 | 56 | 72.1 | 3.20 |
| Waukon | 19 | 93 | 7 | 55 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Dubuque | 25 | 100 | 30 | 58 | 77.9 | 1.83 | 5, 24 | 95 | 20 | 51 | 70.8 | 4.30 |
| Monticello | 25 | 101 | 7 | 59 | 78.2 | 5.25 | 5 | 98 | 20 | 50 | 70.4 | 3.65 |
| Bowen's Prairie. | 3 | 98 | 6, 7, 12 | 58 | 74.8 | 5.00 | 5 | 96 | 12, 20 | 50 | 70.2 | 3.00 |
| Fort Madison... | 19 | 105 | 30 | 63 | 82.0 | 1.60 | 5, 23 | 91 | 13, 26 | 52 | 72.0 | 6.50 |
| Guttenberg | 26 | 99 | 30 | 50 | 74.1 | ..... | 22 | 99 | 20 | 43 | 67.8 | ..... |
| Mount Vernon... | 19, 23, 25 | 98 | 8, 12 | 54 | 75.8 | ..... | 24 | 95 | 20 | 49 | 69.6 | ..... |
| Iowa City | { 22, 23, 24, 25, 26 } | 100 | 7 | 55 | 78.3 | 1.85 | 2, 5, 24 | 96 | 20 | 50 | 70.9 | 5.83 |
| Independence... | { 19, 22, 23, 25, 26 } | 99 | 7 | 59 | 78.0 | 6.23 | 5 | 97 | 19, 20 | 51 | 70.2 | 4.13 |
| Near Independence | 26 | 98 | 7 | 60 | 77.9 | 6.60 | 24 | 97 | 19 | 52 | 71.0 | 5.30 |
| Waterloo | 26 | 101 | 29 | 54 | 78.4 | 1.20 | 4, 5, 24 | 98 | 19, 25 | 50 | 72.2 | 7.50 |
| Rockford | 19, 22, 23 | 92 | 6 | 54 | 77.2 | ..... | 18, 24 | 90 | 20 | 46 | 68.0 | ..... |
| Algona | 26 | 97 | 6 | 55 | 75.0 | ..... | 22 | 89 | 19 | 43 | 67.1 | ..... |
| West Bend | 26 | 98 | 6 | 52 | 75.7 | ..... | 18 | 92 | 20 | 44 | 66.2 | ..... |
| Webster City | 24 | 100 | 7 | 55 | 76.6 | 1.07 | ..... | ..... | ..... | ..... | ..... | ..... |
| Boonesboro | 15 | 99 | 7 | 57 | 77.9 | 3.06 | 2, 5, 24 | 90 | 19, 26 | 42 | 66.3 | 6.12 |
| Fontanello | 24 | 100 | 7 | 59 | 79.4 | 2.56 | 5 | 95 | 19 | 47 | 69.8 | 13.00 |
| Grant City | 12 | 104 | 6 | 57 | 80.5 | 2.12 | 18, 22 | 98 | 19 | 47 | 70.7 | 2.60 |
| Logan | 15, 23 | 96 | 7, 8 | 54 | 75.8 | 7.00 | 2, 23, 31 | 87 | 19 | 42 | 66.5 | 1.80 |
| Woodbine | 4 | 102 | 7 | 56 | 77.6 | 4.31 | 2 | 94 | 19 | 43 | 67.5 | 1.29 |
| West Union | 22 | 98 | 30 | 60 | 77.3 | 6.80 | 24 | 94 | 29 | 50 | 70.7 | 6.01 |
| Averages ..... | ..... | ..... | ..... | ..... | 77.6 | 3.72 | ..... | ..... | ..... | ..... | 69.5 | 4.95 |
| MISSOURI. | | | | | | | | | | | | |
| St. Louis Univ.. | 22, 25, 27 | 94 | 3 | 62 | 76.8 | 1.81 | 24 | 93 | 14 | 61 | 75.5 | 6.05 |
| Allenton | 27 | 100 | 8 | 57 | 77.6 | 3.67 | 6 | 98 | 30 | 53 | 73.5 | 5.99 |
| Hematite | 21 | 100 | 8 | 62 | 80.4 | 4.41 | 11 | 96 | 30 | 59 | 77.0 | 4.56 |
| Hannibal | 22 | 95 | 7 | 59 | 79.5 | 6.00 | 5, 23 | 90 | 13 | 54 | 73.0 | 6.70 |
| Rolla | 22 | 97 | 7 | 61 | 70.8 | 3.99 | 6, 24 | 92 | 29 | 63 | 78.6 | 5.64 |
| Jefferson City... | 17 | 98 | 7, 9 | 64 | 80.0 | ..... | 5 | 96 | 13, 30 | 60 | 76.7 | ..... |
| Kansas City | 17, 20, 24 | 96 | 7 | 60 | 79.2 | 3.75 | 6 | 95 | 13 | 54 | 74.1 | 5.83 |
| Harrisonville | 4 | 101 | 6, 7, 9 | 64 | 80.7 | 2.09 | 4, 5, 6 | 98 | 13, 14 | 56 | 73.9 | 7.49 |
| St. Joseph ..... | ..... | ..... | ..... | ..... | ..... | ..... | 5 | 95 | 13 | 54 | 74.7 | 8.30 |
| Oregon | 15, 22, 24 | 98 | 7 | 57 | 80.3 | 0.76 | 2, 5 | 96 | 19 | 50 | 71.8 | 8.44 |
| Corning ..... | ..... | ..... | ..... | ..... | ..... | ..... | 5 | 98 | 19 | 49 | 72.6 | 4.40 |
| Averages ..... | ..... | ..... | ..... | ..... | 79.4 | 3.31 | ..... | ..... | ..... | ..... | 74.7 | 6.34 |
| KANSAS. | | | | | | | | | | | | |
| Atchison | 20, 26 | 100 | 7 | 61 | 81.8 | 2.05 | 5 | 101 | 13, 19 | 53 | 73.1 | 13.10 |
| Williamstown ..... | ..... | ..... | ..... | ..... | ..... | ..... | 5 | 95 | 13, 19 | 54 | 76.3 | 8.55 |
| Leavenworth | 17 | 100 | 7 | 58 | 79.8 | 3.12 | ..... | ..... | ..... | ..... | ..... | ..... |
| Olathe | 17 | 102 | 7 | 60 | 79.6 | 6.55 | 1, 2 | 100 | 13 | 53 | 74.7 | 7.75 |
| Paola | 17 | 100 | 7, 8 | 62 | 80.6 | 3.10 | 5 | 101 | 13 | 55 | 74.7 | 8.36 |
| Baxter Springs.. | 1, 5 | 99 | 7, 8 | 72 | 84.9 | 3.00 | 3 | 100 | 25 | 64 | 88.8 | 9.50 |
| Lawrence | 17 | 99 | 7 | 60 | 80.3 | 5.58 | 3, 5 | 98 | 13 | 53 | 73.5 | 6.69 |

Table showing the range of the thermometer, &c., for July and August—Continued.

| State and station. | JULY, 1870. | | | | | | AUGUST, 1870. | | | | | |
|--------------------|-------------|------------|-------|------------|------------|------------|---------------|------------|--------|------------|------------|------------|
| | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. | Date. | Max. temp. | Date. | Min. temp. | Mean temp. | Rain-fall. |
| KANSAS—Cont'd. | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Holton..... | 24 | 106 | 6 | 62 | 84.4 | 1.00 | 25 | 102 | 19 | 52 | 73.1 | 11.13 |
| State Ag'l College | 14, 15 | 102 | 10 | 65 | 84.9 | 2.98 | 5 | 99 | 19 | 52 | 72.9 | 5.21 |
| Council Grove.... | 13, 14, 17 | 100 | 7 | 60 | 82.7 | 1.90 | 2 | 102 | 19 | 52 | 75.4 | 5.70 |
| Averages..... | | | | | 82.1 | 3.25 | | | | | 75.8 | 8.44 |
| NEBRASKA. | | | | | | | | | | | | |
| Omaha Agency .. | 26 | 102 | 6, 29 | 59 | 80.0 | 2.34 | 22 | 93 | 19 | 50 | 69.4 | 1.53 |
| Bellevue..... | 26 | 96 | 6, 7 | 62 | 82.1 | 2.00 | 2, 5 | 91 | 19 | 50 | 69.9 | 3.60 |
| Nebraska City... | 15 | 98 | 7 | 60 | 79.3 | 2.63 | 5 | 96 | 19 | 48 | 70.4 | 4.10 |
| New Castle..... | 14, 19, 22 | 102 | 29 | 61 | 79.8 | | 4 | 100 | 19 | 50 | 69.7 | |
| De Soto..... | | | | | | | 23 | 94 | 12, 19 | 49 | 69.3 | 2.39 |
| Averages..... | | | | | 80.3 | 1.74 | | | | | 69.7 | 2.32 |
| UTAH TERRITORY. | | | | | | | | | | | | |
| Coalville..... | 21 | 95 | 10 | 55 | 72.5 | | 3, 4, 9 | 90 | 25 | 42 | 68.2 | |
| CALIFORNIA. | | | | | | | | | | | | |
| Monterey..... | 2, 3 | 90 | 8 | 55 | 64.4 | | 3 | 90 | 29 | 51 | 67.8 | |
| Chico..... | 3 | 116 | 15 | 66 | 86.7 | | 3 | 116 | 19 | 60 | 82.2 | |
| Watsonville..... | 1, 2 | 98 | 30 | 58 | 67.0 | | 22 | 85 | 23 | 56 | 67.0 | |
| Cahto..... | 3, 4 | 106 | 14 | 57 | 78.0 | | | | | | | |
| Visalia..... | 3 | 103 | 16 | 70 | 85.4 | | 4 | 105 | 27 | 64 | 82.6 | |
| Averages..... | | | | | 76.3 | | | | | | 74.9 | |
| MONTANA TERR'Y. | | | | | | | | | | | | |
| Deer Lodge City. | 27, 28, 29 | 89 | 26 | 48 | 67.0 | 0.28 | 3, 4 | 88 | 18 | 32 | 56.4 | 0.68 |
| WASHINGTON TER. | | | | | | | | | | | | |
| Port Angeles.... | 5 | 88 | 18 | 54 | 62.4 | 0.84 | | | | | | |
| Seattle..... | 6 | 104 | 15 | 56 | 74.0 | | | | | | | |
| Cathlamet..... | 4 | 103 | 24 | 50 | 63.7 | | | | | | | |
| Averages..... | | | | | | | | | | | | |
| COLORADO TERR'Y. | | | | | | | | | | | | |
| Denver City..... | 18 | 98 | 6 | 53 | 74.2 | 0.51 | 2 | 97 | 11 | 45 | 64.8 | 0.12 |

STATE AVERAGES FOR JULY AND AUGUST, 1870.

Table showing the highest and lowest temperature, (with dates prefixed,) the average mean temperature, and average rain-fall (in inches and tenths) of each State, for July and August, 1870.

| State] | JULY, 1870, | | | | | | AUGUST, 1870. | | | | | |
|--------------------|--------------------|----------------------|-------------------|----------------------|----------------------|--------------------|-----------------------------------|----------------------|------------|----------------------|----------------------|--------------------|
| | Date. | Maximum temperature. | Date. | Minimum temperature. | Average temperature. | Average rain-fall. | Date. | Maximum temperature. | Date. | Minimum temperature. | Average temperature. | Average rain-fall. |
| | | ° | | ° | ° | In. | | ° | | ° | ° | In. |
| Maine | 24 | 100 | 1 | 52 | 71.9 | 2.54 | 9 | 95 | 27 | 44 | 69.0 | 3.08 |
| New Hampshire. | 23 | 100 | 1 | 50 | 72.1 | 2.11 | 9 | 101 | 27 | 38 | 69.1 | 2.93 |
| Vermont..... | 24 | 96 | 1 | 48 | 73.5 | 3.28 | 9 | 97 | 27 | 42 | 68.6 | 3.21 |
| Massachusetts... | 23, 24 | 100 | 3 | 52 | 73.9 | 2.66 | 4 | 100 | 27 | 44 | 74.2 | 3.07 |
| Connecticut..... | 17 | 98 | 4 | 55 | 74.4 | 2.76 | 7 | 97 | 27 | 48 | 72.8 | 2.53 |
| New York..... | 17, 19 | 99 | 2, 30, 31 | 52 | 73.9 | 3.84 | 11 | 100 | 27 | 39 | 71.2 | 3.70 |
| New Jersey..... | 18 | 101 | 4 | 56 | 77.9 | 4.32 | 6, 25 | 97 | 31 | 52 | 75.2 | 4.51 |
| Pennsylvania..... | 17 | 99 | 10 | 51 | 73.1 | 4.46 | 8 | 97 | 27 | 38 | 73.5 | 4.73 |
| Maryland..... | 17 | 98 | 3 | 58 | 78.4 | 4.36 | 25 | 92 | 27 | 58 | 75.8 | 2.96 |
| Virginia..... | 16 | 107 | 9 | 57 | 79.3 | 3.35 | 10, 25 | 100 | 27 | 57 | 77.3 | 2.42 |
| West Virginia... | 17 | 102 | 31 | 56 | 78.4 | 7.30 | 8 | 100 | 21, 22 | 58 | 75.2 | ..... |
| North Carolina... | 28 | 101 | 9 | 56 | 78.6 | 6.90 | 26 | 100 | 23 | 58 | 76.3 | 5.07 |
| South Carolina... | 28 | 98 | 30 | 70 | 83.3 | 3.37 | 25, 26 | 94 | 16 | 68 | 81.0 | 3.36 |
| Georgia..... | 28 | 98 | 8 | 66 | 81.7 | 1.82 | 26 | 96 | 25 | 68 | 79.9 | 1.77 |
| Alabama..... | 14 | 98 | 9 | 64 | 82.2 | 5.60 | 25 | 98 | 2 | 70 | 80.5 | 5.05 |
| Florida..... | 3, 4 | 98 | 9 | 70 | 82.5 | 5.08 | { 1, 2, 7, 11 } { 12, 20, 23 } | 96 | 24 | 70 | 82.8 | 2.69 |
| Texas..... | 17 | 101 | 10 | 67 | 82.3 | 4.24 | 2 | 99 | 3, 31 | 70 | 82.4 | 3.45 |
| Mississippi..... | { 8, 10, 12, 13 } | { 101 } | 16 | 61 | 81.5 | 5.06 | 26 | 95 | 31 | 62 | 77.9 | 4.88 |
| Tennessee..... | 15 | 99 | 9 | 58 | 78.8 | 3.83 | 7, 8 | 95 | 30 | 58 | 77.5 | 4.11 |
| Kentucky..... | 27 | 96 | 8, 30 | 57 | 78.4 | 4.56 | 8, 25 | 96 | 30 | 52 | 75.4 | 3.53 |
| Ohio..... | 20, 23, 25 | 104 | 2, 3, 30 | 56 | 77.1 | 4.68 | 8 | 101 | 26, 27, 30 | 50 | 74.5 | 5.05 |
| Michigan..... | 22 | 105 | { 1, 13, 29, 31 } | 50 | 72.3 | 5.70 | 23 | 108 | 27 | 45 | 69.4 | 2.94 |
| Indiana..... | { 1, 15, 24, 25 } | { 100 } | 8, 30 | 58 | 78.0 | 3.84 | 24 | 96 | 13 | 50 | 73.3 | 2.74 |
| Illinois..... | 17, 25 | 105 | 9, 30 | 52 | 79.3 | 2.85 | 4 | 100 | 20 | 48 | 72.5 | 3.58 |
| Wisconsin..... | 18, 22 | 100 | 4 | 50 | 72.7 | 6.84 | 24 | 97 | 20 | 35 | 67.7 | 6.79 |
| Minnesota..... | 19 | 100 | 28 | 54 | 73.5 | 3.30 | 4 | 100 | 12 | 42 | 67.0 | 5.09 |
| Iowa..... | 19 | 105 | 30 | 50 | 77.6 | 3.72 | 22 | 99 | 19, 26 | 42 | 69.5 | 4.95 |
| Missouri..... | 4 | 101 | 7, 8 | 57 | 79.4 | 3.31 | 4, 5, 6 | 98 | 19 | 49 | 74.7 | 6.34 |
| Kansas..... | 24 | 106 | 7 | 58 | 82.1 | 3.25 | 2, 25 | 102 | 19 | 52 | 75.8 | 8.44 |
| Nebraska..... | { 14, 19, 22, 26 } | { 102 } | 6, 29 | 59 | 80.3 | 1.74 | 4 | 100 | 19 | 48 | 69.7 | 2.32 |
| California..... | 3 | 116 | 8 | 55 | 76.3 | ..... | 3 | 116 | 29 | 51 | 74.9 | ..... |
| Dist. of Columbia. | 17 | 94 | 9 | 67 | 79.5 | 4.80 | 4 | 89 | 27 | 63 | 76.9 | 2.05 |

NOTES OF THE WEATHER—JULY, 1870.

Houlton, Me.—Slight frost, injured tender leaves only, 1st.

Orono, Me.—Damaging tornado 14th. Much damage by lightning this month.

Williamsburg, Me.—Bright aurora about midnight 27th.

West Waterville, Me.—Mean heat 3.84° above average of six Julys, and 4.31° above last July; rain-fall 1.43 inches less than July average of six years.

Gardiner, Me.—Auroras 19th, 23d, 27th, 30th July; mean heat for thirty-four years, 69.088° ; this, 70.684° ; rain for May, June, July, average of thirty-four years, 10.98 inches; this, 6.26 inches.

Lisbon, Me.—Thunder-storm and severe hail 14th; haying finished 30th.

Norway, Me.—Cutting grass 9th, oats 19th; wells failing for first time 28th; ground dry two feet deep 29th. Driest and hottest July known.

Cornishville, Me.—July average heat for forty years 67.16° ; this year, 74.01° .

Stratford, N. H.—Corn silking 12th. Month hot; small streams dried up.

Whitefield, N. H.—Raspberries 12th; cutting wheat, oats not yet ready, 31st

Tamworth, N. H.—Continued drought 1st; grass drying up 16th; auroras 18th, 30th; slight rain 29th.

Goffstown, N. H.—Warmest July I ever knew, and severe drought.

Lunenburg, Vt.—Very dry till 28th, and month very warm.

North Craftsbury, Vt.—Furious wind and rain 8th; thunder-storm, high windy 24th. Since May thermometer at 80° and above on thirty-two days.

East Bethel, Vt.—Basswood blossoms 8th; early apples 28th; refreshing rain 29th. Except in 1868, the hottest July for many years.

Woodstock, Vt.—Thunder-storm, hail, 14th; warm month, little rain, streams very low.

West Charlotte, Vt.—Auroras, crimson, 2d, 3d, 5th, 10th, 13th, 16th, 25th, and with beams 31st; cherries ripe 9th.

Panton, Vt.—Auroras 15th, orange and crimson 25th, crimson 27th; haying finished, harvesting nearly done, 31st.

Castleton, Vt.—Intense red and green meteor 22d; rain ending, (we hope) a very severe drought 29th.

Topsfield, Mass.—Very bright aurora 27th. Many springs dry. Merri-mac River 83° ; 4° warmer than ever known.

Cambridge, Mass.—Auroral lights 18th, 19th; light showers 20th, 29th.

North Billerica, Mass.—Heavy wind and rain 8th; corn in tassel 17th. Hot and dry—no rain since 8th inst.

Lunenburg, Mass.—Except 1868, the hottest July since 1842.

Newport, R. I.—Very dry, no rain nor sea-fogs.

Southington, Conn.—Cutting oats 20th; bank swallows gone 28th; aurora 30th. Drought, wells and springs low and grass dry.

Moriches, N. Y.—Drought severe; little rain since March.

North Hammond, N. Y.—July closes hot, dry; scarcely any green herbage.

Houseville, N. Y.—Aurora 18th; thunder-storm, hail, 24th.

Leyden, N. Y.—Aurora 18th. No lightning all summer till 15th, since frequent and sharp. Severe drought.

Utica, N. Y.—Auroras 18th, 29th; heaviest rain this year 29th.

South Trenton, N. Y.—Fine month for haying; harvest half over 31st.
Depauville, N. Y.—Auroras 6th, 19th, 27th, 30th; on 21st, 1.30 to 2.45 a. m., an electric storm of continuous bright flashes all over the sky, without thunder, and only a few drops of rain. Month hot and dry.

Palermo, N. Y.—Several thunder-storms 27th, first copious rain since March. Such steady heat not remembered in seventeen years.

North Volney, N. Y.—Continued drought; much lightning and thunder.

Himrods, N. Y.—Month 5° warmer than last year; thunder-showers on twenty-one days.

Rochester, N. Y.—Terrific thunder-storm 20th; shooting stars in all directions 27th.

Lockport, N. Y.—Aurora 18th; thunder-storm, hail, 20th.

Buffalo, N. Y.—Month only 0.8° above its average for twelve years.

Newark, N. J.—Month nearly 2° warmer than average of twenty-seven Julys, but not as warm as in 1854, 1866, and 1868. Much rain in month.

New Germantown, N. J.—Seasonable rains, good farming weather, great amount of electric display, light winds.

Newfield, N. J.—Wheat harvest 1st; corn tasseling 20th; katydids 26th. But little rain; heat above 90° on fifteen consecutive days—14th to 29th.

Greenwich, N. J.—Cool enough for fires 2d to 5th. July mean temperatures, 1864, 74.36° ; 1868, 78.69° ; 1870, 77.94° —average for six years, 75.81° .

Fallsington, Pa.—Very warm July, eight days 90° and above.

Plymouth Meeting, Pa.—Oats harvest 19th. Month 2.1° above July average of six years, and 1.6° below 1866, and 1.8° below 1868.

Factoryville, Pa.—Good farming weather, but too many grasshoppers.

Tamaqua, Pa.—Terrific wind, with rain, tearing up trees, &c. 7th.

Catawissa, Pa.—Thunder-storms numerous, one with hail on 18th.

Carlisle, Pa.—Corn in tassel 4th; blackberries 11th; violent thunder-storm 12th.

Fountain Dale, Pa.—July not as hot as in 1868, but drier.

Tioga, Pa.—Good harvest weather and for growing crops.

Grampian Hills, Pa.—Corn in tassel 12th; wheat harvested 23d; cutting oats 28th. Month warm and showery, damaging lay.

Franklin, Pa.—Frequent showers, but no damage to vegetation.

Pittsburg, Pa.—Frequent, heavy, and damaging thunder-storms.

Greencastle, Pa.—Cool nights, warm days. 8th to 11th; tornado, light rain 20th; great drought 31st.

Connellsville, Pa.—More rain in same time than in several years 28th. Mean temperature of July 1868 and 1870 the same— 77.77° .

Emmitsburg, Md.—Very dry and warm in middle of month.

Zuni Station, Va.—Many cases of sunstroke; unusual here.

Surry Court House, Va.—Hale's early peach 13th; katydids 18th. Till 10th rainy and mild; after that fair and warm last part dry. July means, 1868, 82.5° ; 1869, 82.9° ; 1870, 85.4° .

Comorn, Va.—Trumpet flower 1st; althea 7th; oat harvest 11th. Average rain in July for twenty-one years, 3.88 inches; this July, 3.97 inches.

Romney, W. Va.—A hot summer; July had four days of 100° and above.

Statesville, N. C.—Tornado, with thunder and lightning, 26th.

Bluffton, S. C.—Month very dry, last part hot; crops suffering.

Bluff, Ala.—Thunder-showers here on seven days; distant on nine other days.

Coatopa, Ala.—Lightning, mostly with thunder, often with rain, on twenty days.

Manatee, Fla.—July mean temperature, 1869, 84° ; 1870, 83° ; rain, 1869, 7.8 inches; 1870, 11 inches.

Gilmer, Tex.—Katydid 2d; heaviest rain known here 29th, continued with freshets 30th, 31st. Month dry till 19th.

Blue Branch, Tex.—First part of July dry, last half showery and remarkably cool.

Lavaca, Tex.—On 10th, at sunset, a brilliant azure bow, like a rainbow.

San Antonio, Tex.—Shower from southeast 10 minutes, then thunder-shower from north, 20 minutes; in the 30 minutes thermometer fell 32° .

Brookhaven, Miss.—Watermelons 4th, peaches 10th, 2d crop figs 20th; whippoorwills ceased calling 25th; large hail from southeast 25th. Not one entirely clear day in July.

Elizabethton, Tenn.—Like June, very cloudy and rainy.

Lookout Mountain, Tenn.—Very dry till rains on 31st.

Clarksville, Tenn.—Air moist and hot for some days; feels like a vapor bath 11th.

Salem, Ohio.—Rain on fourteen days, but grain not damaged.

Stenbenville, Ohio.—Thunder, with heaviest rain ever known here, 1st.

Painesville, Ohio.—More rain, thunder, and lightning than ever known in July.

Gilmore, Ohio.—Katydid 12th; aurora 18th; potato bugs at work 24th.

Cleveland, Ohio.—July averages for sixteen years—temperature 72.61° , rain 3.26 inches; this year temperature 72.28° , rain 10.15 inches.

Kelley's Island, Ohio.—Thunder-storm 24th, lightning struck a post in a vineyard, followed the vines, and destroyed the whole row.

Westerville, Ohio.—Shower 6th, pouring rain 7th; thunder-shower, wind, hail, ending in a steady rain, 28th.

North Bass Island, Ohio.—Heavy, damaging hail 8th. Rain on twelve days; intense electric action all the month.

Bowling Green, Ohio.—Many and brilliant electric displays in July.

College Hill, Ohio.—Shooting stars 25th, 27th, 29th, to southwest, wind northeast.

Ann Arbor, Mich.—Frequent rains damaged much wheat.

Alpena, Mich.—Kingfisher 20th; humming bird 26th; corn tassels 31st.

Lansing, Mich.—Rainiest July in many years; June and July 15.29 inches.

Litchfield, Mich.—Heaviest thunder-shower in four years 6th, (2 inches in 15 minutes.) Thunder and chain lightning on twenty-three days, wheat not damaged.

Northport, Mich.—Heavy thunder, much rain and hail 23d.

Veray, Ind.—Thunder, vivid lightning, sleet and drenching rain 1st, showery to 15th; uncommonly violent storm 21st.

La Porte, Ind.—Violent storm, hail, 13th, and thunder, high wind, 27th.

New Harmony, Ind.—Month 3.5° below July, 1868, but more oppressive because "temperature of evaporation" was very high—the wet bulb ranging 80° to 85° from 15th to 28th.

Harreysburg, Ind.—The most seasonable month known here.

Marengo, Ill.—Copious thunder-shower 14th, ended drought of only 3.59 inches rain in one hundred and four days; cutting wheat 15th.

Mattoon, Ill.—Grain cut, peaches ripening 25th. A dry month.

Aurora, Ill.—Thunder, heavy rain, hail 14th; warmest fortnight in twenty years 15th to 28th.

Louisville, Ill.—Wheat harvested 4th, oat harvest began 5th.

Golconda, Ill.—Very dry, till rain of 27th saved the crops.

Belvidere, Ill.—Copious rains 13th, 14th; hail 15th. Very hot.

Ottawa, Ill.—Fearful tornado, twisted off trees and destroyed lives 17th.

Decatur, Ill.—Driest summer known here, and hottest ever wanted!

Tiskilwa, Ill.—Terrible heat and longest drought in twenty-five years.

Hennepin, Ill.—Great drought, heat 90° and over on twenty-one days.

(S.)—Very little due all summer, and eight days at temperature of 100° and over. (O.)

Dubois, Ill.—Terrific thunder-storm and destructive tornado 13th; katydid 14th. Month 3.5° warmer than July average of six years.

Mt. Sterling, Ill.—Thunder, no rain, severe gale, damaging trees, corn, &c., 13th. July nearly 10° warmer than last year.

Andalusia, Ill.—Very dry month, a few very slight showers.

Manitowoc, Wis.—Eighteen thunder-storms on twelve days.

Hingham, Wis.—A wet month for haying.

Geneva, Wis.—Barley and oat harvest 27th; wheat harvest 28th.

Embarrass, Wis.—Tornado, with thunder-storm, 13th; hardest rain in fifteen years, with hail, 19th; thunder-storm, hail, freshet 22d, 23d.

Rocky Run, Wis.—Auroras 28th, 31st. Much rain, thunder, &c.

Edgerton, Wis.—No rain from March 26 till June 30; driest and hottest summer in twenty-two years.

Mosinee, Wis.—Auroras 1st, 14th, 15th, 24th; thunder-storms, with gale, 13th; 24th, with hail; freshet 19th; fine harvest weather 30th.

Tunnel City, Wis.—Dreadful thunder-storms, sweeping freshets 13th, 14th, 15th, 16th, 17th, destroying fences, hay, &c.

Koniska, Minn.—Pleasant month, but dry in early part.

New Ulm, Minn.—Thunder-storm, hail, 23d; shooting stars 25th.

Clinton, Iowa.—Except heavy thunder-storm on 14th, July very dry, and hottest month in two years.

Waukon, Iowa.—No rain since May till severe thunder and destructive hail storm of 14th; most rain in one storm this year, and hail 15th.

Dubuque, Iowa.—Several months dry and hot, but our porous soil stands drought well.

Fort Madison, Iowa.—Cutting winter wheat 2d, rye 3d, meadow grass 5th, spring wheat 13th, oats 14th. Severest drought known here.

Guttenberg, Iowa.—Rain last night filled our empty cisterns 15th.

Iowa City, Iowa.—Hot June and July; mean temperature 84.68° from 13th to 27th; the longest and highest "heated term" in thirty-two years; July average of that time for those years being only 72.51° .

Rockford, Iowa.—Terrible thunder, copious rain, 14th, 15th; ended the greatest drought in my sixteen years' residence here.

Algona, Iowa.—Good thunder-storm ended drought 26th. Hottest month known here.

Boonsboro, Iowa.—Month 6.11° hotter than July average of fourteen years, and April, May, June, and July 6° warmer than their average for same years.

Logan, Iowa.—Severest thunder for years, and heavy rain 27th.

West Union, Iowa.—Severe thunder-storms 15th, 16th, 17th, with hail 24th.

Hematite, Mo.—Severe thunder-storm, with hail, 5th, katydid 17th.

Rolla, Mo.—This July 5° hotter than last, and 5° colder than in 1868.

Jefferson City, Mo.—First drenching rain since April 10.

Oregon, Mo.—Auroras 1st, 28th; cutting spring wheat 5th, oats 7th.

Atchison, Kans.—Mean temperature 3.4° above July average for seven years; rain 2.7 inches less than the average for six years.

Lawrence, Kans.—Above 90° on twenty-two days. Rain from March 1 to August 1, 1870, 12.86 inches; 1869, 19.84 inches; 1868, 17.07 inches.

Holton, Kans.—Hottest and driest July known here; heat 90° and above on twenty-five days, and 100° and above on nine days.

Manhattan, Kans.—Hottest month on our record of ten years.

Belleue, Nebr.—Month dry, and 8° warmer than in 1869.

Harrisburg, Utah.—Heavy rain, freshet 8th; thunder-storm 24th.

Coalville, Utah.—Myriads of locusts through July.

Cahto, Cal.—Brilliant meteors 4th, 23d; wheat harvested 25th.

Chico, Cal.—Heat above 90° every day; 100° and above on twenty-one days.

Visalia, Cal.—Heat above 90° on twenty-nine days, and 100° or more on five days.

Cathlamet, Wash.—Heat scorched the tender leaves of shrubbery, and cooked gooseberries on the bushes.

NOTES OF THE WEATHER—AUGUST, 1870.

Mt. Desert, Me.—Hot and dry; fires in woods in all directions.

Williamsburg, Me.—Auroras, 22d, 24th; frost, 27th—damage on low grounds.

West Waterville, Me.—Swallows left 20th; auroras 22d, 24th, 28th.

Gardiner, Me.—Auroras 2d, 4th, 22d, 26th, 27th, 28th, 30th, 31st, bright 19th, 21st, 24th. First three weeks hottest known here in August. August average for thirty-four years, 67.018°; this, 67.785°.

Lisbon, Me.—Auroras 21st, 27th, 31st; frost kills vines 27th.

Norway, Me.—Cutting rye 3d, oats 6th; frosts 16th, 26th; aurora 19th.

Cornish, Me.—Auroras faint 18th, beams 24th, and corona 19th.

Cornishville, Me.—Auroras 19th, 20th; frost 27th. Average August temperature for forty years, 64.143°; this, 71.66°. The hottest summer known here.

Stratford, N. H.—Frosts, slight, 16th, killed buckwheat 27th.

Whitefield, N. H.—Slight frosts 16th, 27th; auroras 20th, 22d, bright 19th.

Tamworth, N. H.—Frosts, with ice, no injury, 16th, killed vines 27th; auroras 18th, 20th, 21st, 24th, grand 19th, very bright 31st. Severe long drought.

Goffstown Center, N. H.—Bright auroras 19th, 28th. Warmest August and severest drought known here.

Lunenburg, Vt.—Auroras nearly every evening, and very bright.

North Craftsbury, Vt.—Auroras 24th, 26th, 27th, 28th; slight frost 27th.

Newport, Vt.—Auroras 19th, 20th, 21st, 24th, 26th, 28th, 29th, 30th.

Randolph, Vt.—Bright aurora 19th; cutting up corn 20th. Summer average temperature for five years; 67.70° this, 71.1°. August, five years, 66°; this, 67.3°.

Woodstock, Vt.—Aurora, double arch, cloud-like streamers, waves of light flashing to zenith, 19th; slight frost 27th. Wells and streams nearly dry.

West Charlotte, Vt.—Auroras 20th, bright crimson 13th, red 22d. Drought.

Panton, Vt.—Brilliant aurora 19th; very heavy dew 31st.

Kingston, Mass.—First rain in twenty-eight days 10th; red aurora, arch, 19th.

Georgetown, Mass.—Heavy rain, ended severe drought, 11th; shooting stars 16th, 18th, 19th; bright auroras 19th, 28th; frost reported 27th.

North Billerica, Mass.—Grass dead, trees dying, 9th; rain 10th, 14th; bright aurora 19th. Springs low. A dry, hot summer.

Lunenburg, Mass.—Brilliant aurora 19th; white frost 27th. Warmest August on my record, mean 73.03° ; in 1869, 67.13° ; average thirty-one years 68.55° : this summer mean 72.81° ; warmest in ninety-two years.

Amherst, Mass.—Auroral arch, then flashing streamers, 19th.

Middletown, Conn.—Brilliant aurora 19th; frost on low ground 27th.

Southington, Conn.—Bright aurora 19th. Summer mean temperature, 73.5° .

Moriches, N. Y.—Auroras, bright 19th, dull 20th; thunder-storm, with wonderful displays of lightning, 25th.

South Hartford, N. Y.—Tremendous rain, and hail two inches deep, doing much injury, 6th; brilliant auroras 19th, 21st; light frost 27th.

Caldwell, N. Y.—Heavy rain, more than in all July, 3d; auroras 4th, 30th, brilliant 19th; splendid meteor in east 11th.

Garrison's, N. Y.—Month dry; streams low, some dried up.

New York City.—Auroras 19th, 28th, 29th, 31st. June not as warm as in 1860 and 1865; nor July as in 1864, 1865, 1866; nor August as in 1863, 1864. Summer mean, 1870, (76.434°), is 1.502° below 1864, 0.962° below 1865, and 3.905° above average of ten last summers, and 3.782° above average of twenty-five last summers, of which twenty-five 1865 was the warmest, and 1849 the coldest.—(*Prof. O. W. Morris.*)

Brooklyn, N. Y.—Beautiful white, pale blue, and amber aurora 19th.

Glaseo, N. Y.—Aurora 19th; heavy thunder-storm 25th; lightning killed several persons in Kingston.

Cooperstown, N. Y.—Light frost 27th; springs low. Month favorable for crops.

North Hammond, Y. Y.—Terrible drought; fires in wood and field; stock suffering for food and drink. Hottest season ever known here.

Houseville, N. Y.—Auroras 18th, 19th, 30th. Streams low or dry.

Utica, N. Y.—Heavy rain, wind, and severest lightning and thunder known here 8th; much damage by flood and lightning; auroras 18th, 25th.

South Trenton, N. Y.—Terrific storm, pouring rain, sharp lightning, floods 8th; slight frost 27th. Hottest August in sixteen years.

Oneida, N. Y.—Severe thunder-storm 8th; another 9th—10 inches rain.

Depauville, N. Y.—Auroras 4th, 18th; shooting stars 4th; corn ripe 20th. Spring and summer rain-fall in 1869 20.34 inches; in 1870, 12.39 inches.

North Volney, N. Y.—Aurora 30th. Summer mean, 1870, 72.75° .

Newark Valley, N. Y.—Frost 27th. Ground very dry—crops suffering.

Himrods, N. Y.—Auroras, brilliant 19th, like fire-waves passing over the whole sky 20th. Severest drought since 1854.

Buffalo, N. Y.—Bright aurora 20th; terrific thunder-storm and tornado 29th. Month 2° and summer 2.5° above their averages of twelve years.

Newark, N. J.—Auroras, beautiful 19th, bright 20th; thunder-storm with heavy rain; many persons killed by lightning 25th. This summer 1.25° above any since 1843, and nearly 3° above the average of the twen-

ty-seven—the mercury fell lower in all, but rose higher in fourteen, and in twelve there were more days above 90°.

Trenton, N. J.—Terrific thunder-storm 10th; the air was sulphurous with lightning; many places were struck, but no fires nor loss of life.

Rio Grande, N. J.—Very dry August; much thunder, but little rain.

Haddonfield, N. J.—Severe tempest. heavy rain 11th; auroras 19th. very fine, extending to zenith 20th.

Greenwich, N. J.—Yesterday drought, to-day ground saturated, 10th; beautiful crimson aurora 19th.

Hamilton, Pa.—Bright aurora 19th; frost severe on low ground 26th.

Fallsington, Pa.—The warmest August in twenty-one years.

Horsham, Pa.—Bright aurora, beams to the zenith, 19th.

Factoryville, Pa.—Auroras, streamers 19th, faint 20th. Severe drought.

Carlisle, Pa.—Splendid aurora 12th; meteor of great size and beauty 16th.

Tioga, Pa.—Beautiful aurora 20th; frost kills some buckwheat 27th.

Grampian Hills, Pa.—Corn silking 1st. Season favorable for crops.

Franklin, Pa.—Brilliant aurora 20th. August means, 1868, 69.13°; 1869, 69.64°; 1870, 69.89°. Summer mean, 1870, 71.05°.

Green Castle, Pa.—Numerous shooting stars from E. to W. 3d.

New Castle, Pa.—Beautiful aurora 19th. Frequent thunder-showers.

Woodlawn, Md.—Auroras 19th, 20th; very smoky 21st, 22d, 23d.

Johnsontown, Va.—Auroras, 19th, 20th. Ground not wetted in fifty-four days.

Hampton, Va.—Drought continues. Month 2° warmer than in 1869.

Surry, Va.—Auroras, faint white 7th, bright white and red 19th. Month and summer hot and dry; but one good rain, (on 14th,) frequent slight showers.

Wytheville, Va.—Katydid 9th; brilliant aurora 19th. Twenty rainy days, damaged hay, &c. Farmers plowing for wheat sowing.

Romney, W. Va.—Aurora 19th. Hot summer, but good for crops.

Albemarle, N. C.—Aurora, white beams and flashes, 20th. Drought.

Gowdeysville, S. C.—Auroras 19th, 20th. Rains light here, more elsewhere.

Bluffton, S. C.—Month warm; fair amount of rain. Picking cotton.

Penfield, Ga.—Aurora for thirty minutes, deep red, 19th.

Pilatka, Fla.—Month hot and dry—only two light showers.

Clarksville, Tex.—Month cooler and more equable than in many years.

Lockhart, Tex.—Seasonable rains during the month.

Elizabethton, Tenn.—Brilliant aurora 19th. Month damp and cloudy, as were June and July.

La Grange, Tenn.—Beautiful auroras, beams, columns, 19th, 20th.

Wooster, Ohio.—Auroras 19th, 20th, 22d, 24th, 25th, 28th, and meteors 19th, and two meteors 30th.

Adams Mills, Ohio.—Auroras, bright 19th, slight 20th, 21st; lightning like globes of fire 23d.

Kelley's Island, Ohio.—Auroras bright, to zenith 20th, 21st, diffused 28th, 29th.

North Fairfield, Ohio.—Auroras, bright 19th, brilliant 20th, rainbow colors 24th. Drought continues.

North Bass Island, Ohio.—Bright aurora, arch, beams, corona, 20th. Long drought.

Bowling Green, Ohio.—Auroras 19th, 20th. Ground too dry for plowing.

Urbana, Ohio.—Aurora 18th, 25th. Month 1.72° above its average for eighteen years—rain considerably less than the average.

Detroit, Mich.—Auroras, bright beyond zenith 20th, faint 24th.

Alpena, Mich.—Auroras, flashes beyond zenith 20th, fine 24th.

Northport, Mich.—Aurora 19th. Ground full of water; warm yet.

Copper Falls, Mich.—Auroras always frequent here, but on 19th were deep red, with abundant streamers extending beyond the zenith.

Ontonagon, Mich.—June and July were very dry, August quite wet.

Veray, Ind.—Grapes drying up; refreshing rains 13th; aurora 20th.

Marengo, Ill.—A welcome copious rain 7th; brilliant aurora 19th.

Aurora, Ill.—Auroras 21st, 24th, 29th. A good farming month.

Belvidere, Ill.—Summer means, 1867, 67.41° ; 1868, 71.06° ; 1869, 67.37° ; 1870, 71.49° . No frost since April 29th.

Winnebago, Ill.—Frequent meteors 10th; auroras 19th, 21st, 31st. Summer mean 72.56° , 2.72° above the average of twelve years.

Dubois, Ill.—August average of 12 years, 3.92° below this month.

Hennepin, Ill.—Showers 6th to 8th, revived herbage and late crops.

Mt. Sterling, Ill.—Aurora, streamers to zenith. Plowing and sowing wheat.

Manitowoc, Wis.—Auroras, arch and beams, 19th, 21st, arch only 29th.

Embarrass, Wis.—Auroras 2d, 4th, 19th, 29th; eight inches rain in seven days up to 29th, made damaging floods.

Mosinee, Wis.—Frost and ice 20th; streamers north to south 25th, 26th.

Baraboo, Wis.—Excellent month for crops and work, all rains at night.

Tunnel City, Wis.—Severe thunder-storm, lives and buildings destroyed 5th; heavy rains and ruinous floods 27th, 28th; triangular aurora, apex near zenith, 29th.

Minneapolis, Minn.—Frosts 12th, 19th. Coldest August in fifteen years.

Litchfield, Minn.—Light frosts 12th, 18th; bright auroras 19th, 20th.

New Ulm, Minn.—Auroras, like waves of fire, lightning flashing in the cloud beneath, 19th, streamers 24th; heaviest rain in several years 22d.

Clinton, Iowa.—Fine month; no frost, no cold nights.

Fort Madison, Iowa.—Auroras 19th, 20th. Rain April 1 to August 1, 5.16 inches.

Iowa City, Iowa.—August averages of thirty-one years: heat, 70.7° ; rain, 5.69 inches.

Rockford, Iowa.—Very dry till 18th; slight frost 20th.

Algona, Iowa.—A good soaking rain 1st. A very pleasant month.

Boonesboro, Iowa.—Auroras 19th, 21st. Month 1.75° below average of fourteen years.

Logan, Iowa.—Slight frost 19th; beautiful meteor with long train 22d.

Woodbine, Iowa.—Light frost 26th; faint aurora 24th to 25th.

St. Louis, Mo.—End of nearly continuous rain for two weeks 15th; faint auroras 19th, 20th.

St. Joseph, Mo.—Five thunder-storms, each uprooting trees, &c.

Oregon, Mo.—Fires needed 12th, 13th; auroras, brilliant, 19th, faint 21st, 25th, 28th, 29th; great rain and wind storm, much injury, 28th.

Corning, Mo.—Coldest, hardest August storm I ever knew, 12th.

Williamstown, Kans.—Melons 1st; auroras, brilliant, 19th, 24th, moderate 21st; meteoric shower 21st. Heavy rains but do not swell the streams much.

Paola, Kans.—Heavy thunder-storms and gales 18th, 25th, 28th.

Lawrence, Kans.—"Heated term" of fifty days ended 8th—mercury

above 90° on forty-six days, but nights were cool. Rain on sixteen days in August.

Holton, Kans.—Much wind, thunder, lightning, rain; ground too wet for plowing.

Bellevue, Nebr.—Aurora 19th; brilliant meteor 22d; slight frost 26th.

New Castle, Nebr.—Except a few drops, no rain for three months.

Coalville, Utah.—Frosts, slight, 24th, kills vines 25th, 29th, 30th.

Deer Lodge City, Mont.—Ground squirrels in winter quarters 10th; snowed on mountains 18th, 19th, 23d, 24th, 27th; in valley 18th; ice half an inch thick 25th; auroras, fine 23d, dim 28th.



MONTHLY REPORT

OF THE

DEPARTMENT OF AGRICULTURE



FOR

OCTOBER, 1870.



WASHINGTON.
GOVERNMENT PRINTING OFFICE,
1870.



MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE, STATISTICAL DIVISION,
Washington, D. C., October 20, 1870.

SIR: I herewith present for publication a digest of the reports upon the condition of the crops for the month of October, with brief notes from reporters thereon, together with various extracts from the correspondence of the Department, the address of the Commissioner at the Illinois State fair, and articles upon variety in southern productions, climate of Southwestern Arkansas, Osage orange as feed for silkworms, the Louisiana rice crop, market prices of farm stock, the drought in England, agricultural statistics of Ireland, diseases of cattle in Europe, wool-growing in Uruguay, the treatment of liquid sewage in Great Britain, scientific notes, meteorology for September, &c., &c.

J. R. DODGE,
Statistician.

Hon. HORACE CAPRON,
Commissioner.

CONDITION OF THE CROPS.

Wheat.—The wheat crop of 1870, in a majority of the States, and especially in those in which this cereal is prominent, is materially less in quantity than the crop of 1869, which was a very large one, notwithstanding the assertions of some croakers to the contrary. The reduction is due, first, to the loss of plants by an unpropitious season for germination and early growth of the winter variety, followed by an open and somewhat variable winter, and, second, to the drought which prevailed with great severity in the Northern and Eastern States. This reduction, as averaged from our local returns, appears to be about 14 per cent. In the several States it is as follows: Maine, 5; New Hampshire, 10; Vermont, 10; New York, 30; New Jersey, 23; Pennsylvania, 13; Delaware, 30; Maryland, 17; Virginia, 9; Mississippi, 17; Texas, 2; Missouri, 10; Illinois, 10; Indiana, 18; Ohio, 14; Michigan, 9; Wisconsin, 20; Minnesota, 15; Iowa, 13; Kansas, 2; Nebraska, 13; California, 15; Oregon, 3. The States indicating an increase are: Massachusetts, 2; Connecticut, 1; North Carolina, 9; South Carolina, 10; Georgia, 10; Alabama, 12; Arkansas, 7; Tennessee, 9; West Virginia, 2; Kentucky, 2. In the early spring the "condition" of the wheat fields pointed to a decrease of 20 per cent. As is usually the case, adverse returns have had a more cheerful aspect as the season advanced, and a result somewhat more favorable to production is now recorded; yet the monthly records have maintained a close correspondence throughout the season, verifying the general correctness of the reports.

The Colorado grasshopper has been very troublesome in the Territories. In parts of Utah farmers are preparing to sow fall wheat extensively, hoping to escape their ravages—in San Pete County, Utah, very little grain has been saved; much land was replanted, and the fields are still green, while frosts have already appeared. In Conejos County, Colorado, not more than half the crop was harvested at the date of the report, and the ground was already covered with six inches of snow.

The average quality of the crop is better than that of 1869. In portions of the Eastern States and in New York the grain was shriveled by dry weather. In Pennsylvania and Maryland, the excessive moisture and high temperature of June were untimely, inducing disease and causing imperfect development. In Virginia, the quality is variable, in some places superior, in others injured by heavy rain while in bloom, some fields suffering from the midge, while occasional injuries were sustained in the stack from wet weather. In the southern wheat belt, including the table-lands of North Carolina and Tennessee, the quantity was in excess of the crop of 1869, but the quality was injured extensively by rains between cutting and thrashing, though many counties report superiority in quality. Smut proved troublesome among careless farmers. Throughout the Ohio and Upper Mississippi States there is an unusually large proportion of No. 1 wheat. Occasional damage from rains while in the stack is reported from the Northwestern States. In Pierce County, Wisconsin, about one-third, all No. 1, was thrashed before the storms, and the remainder was greatly injured, some entirely spoiled. Other counties had a similar experience. The season was comparatively unfavorable in Kansas, on account of the drought in July and August, but less injury was suffered than was expected. The Pacific coast reports are variable. Some counties in California make the quality superior, while others report injuries from rust and inferiority from the immaturity of grain blighted by drought. The early sown fall and spring grain of Oregon is good, while that sown late was injured by the excessive heat of summer.

Among the winter varieties which have succeeded best the Tappahannock is prominently named. It is favorably mentioned throughout the South and West, and has done well among the mountains of Utah.

Complaints of low prices are still heard. Ohio correspondents assert that wheat cannot be profitably grown there at one dollar per bushel. In portions of the Northwest that price cannot be obtained; in Northern Wisconsin 87 to 92 cents per bushel are common quotations.

The fall sowing has been delayed by dry weather, and much of it is slow in germination. This is especially the case in Indiana and Ohio. The fly has begun its ravages in places, and in parts of Kansas the "army worm" has also put in an appearance.

There is yet some old wheat unsold, though the moderately liberal harvest sent most of the surplus to market. Low prices have retained a part of that beyond the Mississippi. Sac County, Iowa, claims to have one-fourth of the old crop still on hand.

Corn.—The corn crop of 1870, unlike those of the two years preceding, is a full one—the best of the past ten years. It is a crop which yields best in our hottest seasons. A large area of the best corn region has had rain enough for its full maturation. The worst effects of drought are seen on the thin, sandy lands of Eastern Massachusetts, reducing the crop 50 per cent. in some fields, while soils of greater depth and better texture give a superior product. Southern New Hampshire has suffered from the same cause, but Maine, New Hampshire, and Vermont,

north of 44°, exhibit better maturity and a greater yield than for several years.

The States of the great corn region, including those bordering on the great lakes and on the Ohio and Mississippi Rivers, have without exception made either a full or a large crop. Illinois, the corn field of the Union, estimated by this Department to have an acreage in maize of 5,237,000 in 1869, figures which proved to be 3 per cent. below rather than above the actual returns of assessors for that year, has this year fully six millions of acres in corn—an area larger than that of the State of New Hampshire. At the low estimate of 35 bushels per acre, the product will reach 210,000,000 bushels. There are intelligent men who estimate nearly a million more for the acreage of Illinois, an average yield of 37 bushels, and a total product of 250,000,000 bushels.

Without reference to increase or decrease in acreage, which was reported in the July number, the average of "condition" is as follows in the several States: Increase—Maine, 10 per cent.; Vermont, 5; Rhode Island, 5; New York, 3; New Jersey, 4; Pennsylvania, 3; Virginia, 3; North Carolina, 12; South Carolina, 10; Georgia, 12; Florida, 6; Alabama, 10; Louisiana, 3; Texas, 1; Arkansas, 16; Tennessee, 22; West Virginia, 10; Kentucky, 15; Missouri, 6; Illinois, 17; Indiana, 18; Ohio, 16; Michigan, 16; Wisconsin, 19; Minnesota, 2; Iowa, 5. Decrease—New Hampshire, 4 per cent.; Massachusetts, 15; Connecticut, 3; Delaware, 10; Kansas, 13; Nebraska, 9; California, 9; Oregon, 5.

The crop has ripened unusually early, without injury from frosts, and is remarkably sound, with exceptions of injury from drought, as in Eastern Massachusetts, where some fields were cut up for fodder, and in Virginia, where a portion overwhelmed by the floods was rendered unfit for use of man or beast. Excessive rains have wrought injury in some parts of the South and in the Missouri Valley, where the rains of September have been very abundant; in Nebraska the rain-fall for the month being about seven inches.

Other grains.—Rye gives a somewhat smaller yield than in 1869. It is grown for pasturage in the Southern States more extensively than usual. In quality the grain is generally good; though not fully up to an average in New Hampshire, Massachusetts, Connecticut, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and Tennessee.

Oats are not generally so productive as last year, except in the South, in Michigan and in New Jersey. There is, also, a like depreciation in quality, in most quarters. An average quality is reported from New Jersey, Delaware, Maryland, Virginia, Georgia, Alabama, Mississippi, Arkansas, West Virginia, Kentucky, Ohio, Indiana, Michigan, and Iowa.

The aggregate product of barley appears to be less than in 1869. The only exceptional States are Georgia, Tennessee, West Virginia, Kentucky, Iowa, and Nebraska. The quality in the West is generally good; below an average in the Atlantic States, and scarcely an average in the Southwest, where it is grown to a very limited extent.

The only States yielding full crops of buckwheat are Tennessee, Kentucky, Missouri, Illinois, Iowa, Minnesota, Kansas, and Nebraska. The aggregate is less than usual.

Beans and peas.—The reports indicate an average product, in quantity and quality, with some local variability. The pea crop, which is one of great importance to the South, has occupied a larger acreage than formerly in North Carolina, Georgia, and Tennessee, but has been somewhat neglected in other cotton States.

Potatoes.—Potatoes exhibit a considerable reduction in yield, which is below an average in all of the Atlantic States to Virginia, inclusive,

and in all Western States north of the Ohio River, the depreciation ranging from 15 to 44 per cent. The crop has been an average one in West Virginia, Kentucky, Tennessee, and Arkansas. Some reduction in quantity is experienced on the Pacific coast.

The sweet potato crop is comparatively a large one.

Sorghum.—While the acreage of sorghum is not very large, the crop is in superior condition, and promises a yield of sirup of fine quality.

Cotton.—The increase in breadth of cotton was estimated in July at 12 per cent., viz., North Carolina, 8; South Carolina, 5; Georgia, 7; Florida, 7; Alabama, 13; Mississippi, 12; Louisiana, 20; Texas, 25; Arkansas, 10; Tennessee 5. The appearance of the crop on the first of October was reported as follows: Below an average in condition—Mississippi, 1 per cent.; Alabama, 4; Louisiana, 8; Georgia, 1; Tennessee, 3. Above an average—Texas, 5 per cent.; Arkansas, 5; Florida, 2; South Carolina, 4; North Carolina, 7. Combining the elements of acreage planted and condition on the first of October, the natural expectation, other circumstances being equal, would lead to a comparison with last year, as follows: North Carolina, 15 per cent. increase; South Carolina, 9; Georgia, 5; Florida, 9; Alabama, 8; Mississippi, 10; Louisiana, 10; Texas, 30; Arkansas, 15; Tennessee, 1. This would give a crop exceeding three and a half millions of bales. But the indications of the season thus far, reports since October first, and the probabilities of a favorable autumn for maturing and picking the "top crop" do not prognosticate a return of the remarkably favorable experience of the past season. In 1869 the discouragements and drawbacks appeared with the plant in spring, and gradually disappeared, the season culminating in almost unexampled favor, with exemption from destroying frosts, blighting rains, insects, and disease. The present crop, vigorous in early growth, "running to weed" rather than boll, then burned with drought in August, and subsequently flooded with rain in September, has endured vicissitudes unfavorable to continued fruitfulness, as a general shedding of forms and occasional rotting of bolls attest. The boll worm and army worm have been at work in places, and rust is more or less prevalent in all the cotton States. The opening of the later bolls is unusually well advanced in most places, and the last picking promises to be light. These indications, instead of pointing to an increase of a third of a million bales, render it probable that the present crop will be no larger than the last, and if the remainder of the season should be very unpropitious a reduction of a quarter of a million bales might result. Another month or two will determine whether the present crop shall be limited to three millions of bales, or rise to three and a half millions.

As predicted early in the season, the promise of an average crop upon the present area in cultivation has reduced the price to fifteen cents per pound, or to the very verge of profitable cultivation; and correspondents are already reporting the ruin of planters who grow cotton exclusively and buy all agricultural supplies.

Sugar cane.—A large increase in the product of cane sugar is regarded as certain. For several years a considerable part of the crop has been used as "plant cane" for extending the area of cane culture. This extension is beginning to enlarge production materially, and will aid, in connection with the fine condition of the growing plant, to swell the sugar yield of the present year. The average condition of this crop in Louisiana is placed at eleven-tenths, or 10 per cent. above a medium. In Texas the prospect is equally favorable, and generally favorable returns come from the limited sugar area of Mississippi, Alabama, Georgia, and Florida. In Brooks County, Georgia, in Liberty County, Florida, and in Rapides

and West Feliciana Parishes, Louisiana, deterioration of condition from drought is reported. Our correspondent in Iberia Parish, Louisiana, gives an illustration of the progress of cane-growing in that State: "The quantity of cane planted is greatly in excess of last year; new mills are going up all over the parish, and a season of general prosperity is apparently at hand."

Old wheat.—There is a comparatively large surplus of old wheat in Tennessee, Missouri, Iowa, Kansas, and Nebraska, and as much as usual in Ohio, Indiana, and Kentucky, and smaller States. There is no evidence of any large surplus to add materially to the supplies of the year.

Beef cattle.—The supply of fattening cattle is somewhat in excess of former years, with great local variation. In Maine, New Hampshire, and Vermont, it is caused by an apprehended deficiency of hay and other feed, and their condition is relatively low. A good supply is reported in the West, in fair condition. A deficiency is reported in California, Virginia, New Jersey, New York, and the southern half of New England, in somewhat reduced condition except as to Virginia.

Table showing the condition of the crops, &c., on the 1st day of October, 1870.

| STATES. | WHEAT. | | RYE. | | OATS. | BARLEY. | BUCK- WHEAT. | COEN. | POTATOES. (Solanum tuberosum.) |
|---------------------|--|---|--|---|--|---|-----------------|-------|--------------------------------------|
| | Product com- pared with last year. | Average qual- ity compared with last y.r. | Product com- pared with last year. | Average qual- ity compared with last y.r. | Product com- pared with last year. | Average qual- ity compared with last y.r. | | | |
| Maine..... | 9.5 | 10.1 | 9.6 | 10.1 | 9.2 | 9.9 | 9 | 11 | 9.3 |
| New Hampshire..... | 9 | 10 | 9.1 | 9.6 | 9.3 | 9.4 | 9.5 | 9.6 | 7.5 |
| Vermont..... | 9 | 10.5 | 9.2 | 10.4 | 8.8 | 9.8 | 7.6 | 10.5 | 9 |
| Massachusetts..... | 10.2 | 10 | 9.7 | 9.7 | 9.2 | 9.7 | ..... | 8.5 | 7.1 |
| Rhode Island..... | ..... | ..... | 10.2 | 10 | 9.7 | 10 | ..... | 10.5 | 8.7 |
| Connecticut..... | 10.1 | 10.3 | 10 | 9.7 | 8.2 | 9 | 6.7 | 9.7 | 7.5 |
| New York..... | 7 | 10 | 9 | 10 | 8.4 | 9.2 | 8.6 | 10.3 | 8.5 |
| New Jersey..... | 7.3 | 8.5 | 8.3 | 9.4 | 10.1 | 10 | 7.8 | 10.4 | 7.5 |
| Pennsylvania..... | 8.7 | 9.3 | 8.8 | 9.7 | 9.4 | 9.4 | 8.6 | 10.3 | 8.9 |
| Delaware..... | 7 | 8 | ..... | ..... | 9 | 10 | 9 | 9 | 6 |
| Maryland..... | 8.3 | 8.6 | 8.6 | 9.5 | 10.2 | 10.6 | 7.8 | 9.6 | 8.3 |
| Virginia..... | 9.1 | 9 | 9 | 9 | 10.5 | 10.1 | 9.7 | 10.3 | 9.1 |
| North Carolina..... | 10.9 | 9.8 | 10 | 10 | 11 | 9.9 | 10.2 | 11.2 | 10.3 |
| South Carolina..... | 11 | 9.8 | 11 | 10 | 10.9 | 9.5 | ..... | 11 | 9 |
| Georgia..... | 11 | 9.9 | 10.4 | 10.1 | 10.5 | 10.5 | 10 | 11.2 | 10.3 |
| Florida..... | ..... | ..... | ..... | ..... | 10.2 | 10.6 | ..... | 10.6 | ..... |
| Alabama..... | 11.2 | 11 | 10 | 10 | 10.1 | 9.8 | ..... | 11 | 10.2 |
| Mississippi..... | 8.3 | 10.7 | 10 | 10 | 10.5 | 12.1 | ..... | 10.3 | 9.5 |
| Louisiana..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 10.1 | 10 |
| Texas..... | ..... | ..... | 9.3 | 10 | 9.7 | 9.4 | 9 | 11.6 | 10.7 |
| Arkansas..... | 9.8 | 10.5 | 10.4 | 10.1 | 12.2 | 10.7 | ..... | 11.6 | 10.8 |
| Tennessee..... | 10.7 | 10.7 | 10.3 | 9.1 | 11.2 | 9.7 | 10.5 | 12.2 | 10.7 |
| West Virginia..... | 10.9 | 9 | 10.1 | 10.1 | 11 | 10.2 | 9.3 | 11 | 10.1 |
| Kentucky..... | 10.2 | 10.4 | 10.1 | 10.1 | 10.6 | 10.2 | 10 | 10.5 | 10.7 |
| Missouri..... | 9 | 9.8 | 10.2 | 10 | 8.5 | 9.5 | 10 | 10 | 8.3 |
| Illinois..... | ..... | 10.5 | 9.2 | 10.2 | 9.5 | 9.7 | 10.8 | 11.7 | 7.6 |
| Indiana..... | 9 | 11.2 | 9.1 | 10.6 | 9 | 11.5 | ..... | 10.7 | 6.3 |
| Ohio..... | 8.2 | 10.5 | 9 | 10.5 | 9.4 | 10.2 | 9.5 | 11.8 | 6.3 |
| Michigan..... | 8.6 | 10.4 | 9.1 | 10 | 9.6 | 10.1 | 9.8 | 11.6 | 7.9 |
| Wisconsin..... | 9.1 | 10.6 | 9.6 | 10 | 11.3 | 9.7 | 10 | 11.9 | 8.5 |
| Minnesota..... | 8 | 10.6 | 9.2 | 10.4 | 7.1 | 8.7 | 10.3 | 10.8 | 6.4 |
| Iowa..... | 8.5 | 10.7 | 9.8 | 10.2 | 8.4 | 9.2 | 10.1 | 10.2 | 5.4 |
| Nebraska..... | 9.7 | 11.2 | 9.6 | 11.3 | 8.6 | 10.2 | 11.4 | 10.5 | 8.3 |
| Kansas..... | 9.8 | 10.7 | 9.1 | 10.4 | 9 | 9.8 | 10.4 | 8.7 | 8.3 |
| Nebraska..... | 8.7 | 10.8 | 9.6 | 10.2 | 8.3 | 9.4 | 10.2 | 9.1 | 8.3 |
| California..... | 8.5 | 9.5 | ..... | ..... | 9 | 8.4 | 9.5 | 9.1 | 8.1 |
| Oregon..... | 9.7 | 9.7 | ..... | ..... | 9.2 | 9.3 | 9.9 | 9.5 | 8.5 |

Table showing the condition of the crops, &c.—Continued.

| STATES. | POTATOES, (Batatas edulis) sweet. | TOBACCO. | BEANS. | PEAS. | | SORGHUM. | SUGAR CANE, (not sorghum). | COTTON. | OLD WHEAT. | FATTENING CATTLE. | |
|---------------------|--------------------------------------|----------|--------|-------------------------------|--|----------|-------------------------------|---------|------------|--|--|
| | | | | Average condition Octo-ber 1. | Average condition Octo-ber 1. last year. | | | | | Average number of cattle berofattened. | Average condition Octo-ber 1, compared with last year. |
| Maine..... | ..... | ..... | 10.3 | 9.9 | 10 | ..... | ..... | ..... | 10 | 11.1 | 11.1 |
| New Hampshire..... | ..... | ..... | 9.5 | 9.7 | 10 | ..... | ..... | ..... | 9.6 | 10.2 | 10.2 |
| Vermont..... | ..... | ..... | 10.2 | 10.2 | 10.2 | ..... | ..... | ..... | 9.6 | 10 | 10 |
| Massachusetts..... | ..... | ..... | 9.1 | ..... | ..... | ..... | ..... | ..... | 10 | 9.5 | 9.5 |
| Rhode Island..... | ..... | ..... | 10.7 | 10 | 10 | ..... | ..... | ..... | ..... | 9.2 | 9.2 |
| Connecticut..... | ..... | ..... | 10 | ..... | ..... | ..... | ..... | ..... | ..... | 9.2 | 9.2 |
| New York..... | ..... | ..... | 9.8 | 9.6 | 9.6 | ..... | ..... | ..... | 9.5 | 9.2 | 9.2 |
| New Jersey..... | 11.7 | ..... | 8.5 | 9.5 | 9.5 | 10 | ..... | ..... | 10 | 9.5 | 9.5 |
| Pennsylvania..... | 10 | ..... | 9.9 | 9.6 | 9.6 | 10.2 | ..... | ..... | 10.1 | 9.9 | 9.8 |
| Delaware..... | 9 | ..... | 10 | ..... | ..... | 10 | ..... | ..... | 10 | 10 | 9 |
| Maryland..... | 9.5 | ..... | 9 | 10.6 | 9.5 | 9.5 | ..... | ..... | 10.3 | 10 | 9.8 |
| Virginia..... | 9.6 | ..... | 9.3 | 8.8 | ..... | 10.3 | ..... | ..... | 7.8 | 9.6 | 10.5 |
| North Carolina..... | 10.9 | ..... | 12.1 | 8.7 | ..... | 10.3 | ..... | ..... | 10.4 | 10.1 | 10.5 |
| South Carolina..... | 10.2 | ..... | 10.1 | 9.7 | ..... | 10.3 | ..... | ..... | 10.7 | 10.3 | 10.6 |
| Georgia..... | 11 | ..... | 10 | 10.3 | 8.7 | 9.7 | ..... | ..... | 9.7 | 10.5 | 11 |
| Florida..... | 11.6 | ..... | 11.2 | 10.3 | 11.2 | 10.6 | ..... | ..... | ..... | ..... | ..... |
| Alabama..... | 9.1 | ..... | 8.5 | 9.8 | 8.5 | ..... | ..... | ..... | ..... | ..... | ..... |
| Mississippi..... | 10.4 | ..... | 9 | 10.4 | 9 | 12 | ..... | ..... | 10.3 | 10.3 | 11.1 |
| Louisiana..... | 10 | ..... | 9.1 | 9.4 | 9.1 | ..... | ..... | ..... | 10 | 10.4 | 10 |
| Texas..... | 9.5 | ..... | 8.4 | 10.6 | 8.4 | ..... | ..... | ..... | ..... | 10.8 | 10.4 |
| Arkansas..... | 10 | ..... | 10 | 9.8 | 9.5 | ..... | ..... | ..... | ..... | 10.2 | 10.3 |
| Tennessee..... | 10.9 | ..... | 10.1 | 10.1 | 9.8 | 9.5 | ..... | ..... | 10.5 | 11.5 | 10.5 |
| West Virginia..... | 10.9 | ..... | 11 | 10.3 | 10.2 | 11 | ..... | ..... | 10.2 | 10.8 | 11.1 |
| Kentucky..... | 10.1 | ..... | 10.4 | 10 | 10 | 10.7 | ..... | ..... | 9.5 | 10.6 | 11 |
| Missouri..... | 10.5 | ..... | 10.6 | 10 | 9.6 | 9.8 | ..... | ..... | 10.2 | 10.2 | 10.9 |
| Illinois..... | 10.1 | ..... | 10.1 | 10.1 | 10.2 | 10.3 | ..... | ..... | 10.7 | 10.8 | 10.4 |
| Indiana..... | 10.1 | ..... | 9.5 | 10.1 | 9.5 | 10.6 | ..... | ..... | 12.8 | 10.3 | 10.2 |
| Ohio..... | 10.2 | ..... | 10.2 | 10 | 10 | ..... | ..... | ..... | 8.2 | 9.9 | 10 |
| Michigan..... | 9.7 | ..... | 10.4 | 10.6 | 10.7 | 11 | ..... | ..... | 11.2 | 10 | 9.9 |
| Wisconsin..... | 9.8 | ..... | 10.3 | 9.7 | 10 | 11.5 | ..... | ..... | 10.5 | 10 | 9.9 |
| Minnesota..... | ..... | ..... | 10.2 | 9.9 | 10 | 10.5 | ..... | ..... | 9.7 | 10.3 | 10.3 |
| Iowa..... | ..... | ..... | 10.4 | 10 | 10.5 | 11 | ..... | ..... | 9.5 | 10 | 10 |
| Nebraska..... | ..... | ..... | 9.5 | 10.7 | 10 | 11 | ..... | ..... | 7.8 | 9.9 | 9.3 |
| Kansas..... | 9.9 | ..... | 8.8 | 10.1 | 9.7 | 10.3 | ..... | ..... | 10.5 | 10.3 | 10.5 |
| Nebraska..... | 10.1 | ..... | 8.7 | 8.9 | 8.1 | 10 | ..... | ..... | 11 | 11.6 | 10.4 |
| California..... | 8.8 | ..... | 9.9 | 9.8 | 9.8 | 9.9 | ..... | ..... | 10.8 | 10.7 | 9.8 |
| Oregon..... | ..... | ..... | 9.8 | 9.5 | 9.5 | ..... | ..... | ..... | 8 | 9.2 | 8.8 |
| Oregon..... | ..... | ..... | 9.4 | 9.5 | 10.3 | ..... | ..... | ..... | 9.2 | 9.7 | 10.4 |

NOTES ON THE CROPS.

WHEAT.

Oxford County, Me.—Wheat was injured by the drought in many places. Poor quality.

Franklin County, Me.—Wheat below average on account of drought.

Norfolk County, Mass.—Product increased 10 per cent. More will be sown this fall.

Perry County, Pa.—Fifty per cent. below the crop of last year in quantity and quality.

Lancaster County, Pa.—The Tappanhanock wheat yielded 20 to 22 bushels to the acre; Mediterranean, 8 to 9 bushels.

Clearfield County, Pa.—A fair crop.

Kent County, Del.—Quality better than expected, as great injury was sustained when in bloom from wet weather.

Baltimore County, Md.—Crop below an average both in quality and quantity; more old wheat on hand than for some years.

St. Mary's County, Md.—Injured by the scab; yield small; quality below an average.

Spottsylvania County, Va.—Wheat crop no better than last year, except the early maturing varieties on high lands.

Clarke County, Va.—Considerable falling off in the product; the midge inflicted greater injury than was supposed; quality inferior to crop of last year.

Prince Edward's County, Va.—The average crop; caught by heavy rain while in bloom, which materially reduced the yield.

Highland County, Va.—Good crop; harvested and thrashed in fine condition.

King George County, Va.—About three-fifths as large a crop as in 1869; quality variable.

Wythe County, Va.—Crop greatly above an average, but a great deal was injured in the stack by wet weather; 50 per cent. more old wheat on hand than last fall.

Washington County, Va.—Better than last year in quality and quantity.

Gaston County, N. C.—Good crop, but quality rather inferior.

Stokes County, N. C.—Crop better than last year; quality inferior; damaged in stack by wet weather.

Yadkin County, N. C.—Did not thrash out as well as the straw indicated; grain not so plump as last year.

Alamance County, N. C.—The crop thrashed out 30 per cent. more than in 1869; quality not so good.

Anson County, N. C.—Crop over an average.

Jackson County, Ga.—Crop good in quality and quantity.

Red River County, Texas.—A better crop than last year.

Dyer County, Tenn.—Better in quality and quantity than the crop of 1869.

Williamson County, Tenn.—All small grains injured in the shock and at the thrashing by rain.

Greene County, Tenn.—Smut largely mixed with the crop. The use of bluestone, which with the writer is always effective, is not sufficiently common.

Sullivan County, Tenn.—Better yield than last year; straw small, but large product of grain.

Humphreys County, Tenn.—Equal to last year in quantity, but inferior in quality.

Monroe County, W. Va.—Quality first rate, and the yield much larger than last year, though there is less straw.

Nicholas County, W. Va.—Yield light, but of good quality; the increased area sown, however, makes a large aggregate product.

Braxton County, W. Va.—Three per cent. more old wheat on hand than there was last year.

Randolph County, W. Va.—A greater acreage than there has been for years.

Henry County, Ky.—Quality never better, but quantity far below our expectation.

Russell County, Ky.—Quantity about the same as last year, but not equal to our expectations.

Boyle County, Ky.—The low price tends to lessen the quantity now being sown.

Jackson County, Ky.—A good crop, carefully harvested.

McCracken County, Ky.—About one-third of the crop thrashed late, and seriously damaged.

Henry County, Mo.—Old wheat remains unsold, on account of low prices.

Mississippi County, Mo.—Quality as good as last year, and an increased production.

Shelby County, Mo.—The yield falls far short of last year, but the quality is excellent.

Cass County, Mo.—The chinch-bugs have nearly destroyed spring wheat.

Franklin County, Mo.—Amount sown to date exceeds that of last year.

Johnson County, Mo.—Early-sown destroyed by the army-worm in some portions of the county.

Pope County, Ill.—The Orange, Mediterranean, and Tappahannock varieties have produced well, but the varieties of May wheat were shriveled.

St. Clair County, Ill.—Damaged much by weevil. The fall crop is being put in in good order.

Clinton County, Ill.—Fall wheat is growing finely.

Macon County, Ill.—A short crop for two years.

Bureau County, Ill.—Very small yield, but good quality. No old wheat on hand.

Edwards County, Ill.—Grasshoppers still numerous enough in some localities to prevent the sowing of wheat. The wheat harvested is plump and good.

De Kalb County, Ill.—Very fine quality, but small yield.

Jennings County, Ind.—But little sown yet on account of dry weather.

Franklin County, Ind.—That sown a month ago as dry as when sown, and not a stalk to be seen for rods, until the 30th September, when rain came.

Cass County, Ind.—The fly has made its appearance in many early sown fields.

Union County, Ind.—So dry that wheat has not sprouted.

Ohio County, Ind.—Much less being sown than usual.

St. Joseph County, Ind.—Most of the early sown is being injured by the Hessian fly. Fully one-half of the wheat was sown late on account of drought, and may escape the fly.

Miami County, Ind.—Not so much per acre as usual, but of better quality.

Madison County, Ind.—Dry weather prevents the sprouting of that now sown.

Randolph County, Ind.—Coming up badly, and perishing for want of rain.

Dubois County, Ind.—Great drought prevents the sowing of wheat.

White County, Ind.—The fall wheat is doing unusually well.

Lucas County, Ohio.—That sown early is not doing well.

Henry County, Ohio.—Not as much sown as usual, the ground being so dry. Prospects for a coming crop are poor.

Williams County, Ohio.—That sown a month ago not up yet.

Erie County, Ohio.—Suffering from drought.

Lake County, Ohio.—Yield very light, and quality poor.

Greene County, Ohio.—Farmers believe it does not pay at \$1 per bushel.

Marion County, Ohio.—Fall wheat did not sprout until very recently.

Union County, Ohio.—It is feared much that has been sown will die for want of moisture.

Noble County, Ohio.—Quality good, but a smaller yield than was expected.

Medina County, Ohio.—Farmers hesitate to sow on account of dry weather.

Logan County, Ohio.—Yield and quality fine.

Athens County, Ohio.—Above an average yield, and excellent in quality.

Emmet County, Mich.—Short crop but good quality.

Gratiot County, Mich.—The fall sowing looks well.

Calhoun County, Mich.—About an average crop, of excellent quality.

Cass County, Mich.—In part of the county it fails to come up on account of drought.

Washtenaw County, Mich.—Quality superior to that of last year.

Brown County, Wis.—Twenty per cent. less than expected.

Walworth County, Wis.—Average yield about nine bushels per acre.

Green Lake County, Wis.—The quantity will be about three-fourths of last year's crop, but the quality is excellent.

Columbia County, Wis.—Selling at 87 cents to 92 cents per bushel.

Pierce County, Wis.—About one-third thrashed before the great storms, and was all No. 1. The remainder was greatly injured, some entirely spoiled.

Richland County, Wis.—Damaged to some extent by worms.

Waukesha County, Wis.—Quality excellent. Not much old on hand, but more in the county than usual.

Portage County, Wis.—Winter wheat yielded from twenty to thirty-five bushels per acre, of splendid quality.

Milwaukee County, Wis.—A better yield than was expected.

Fond du Lac County, Wis.—The staple crop of this county, and nearly all No. 1, though some was damaged in the stack by rain.

Buffalo County, Wis.—Much was injured by rain.

Watonican County, Minn.—Not a large yield, but quality excellent.

Freeborn County, Minn.—Old stock of wheat was disposed of immediately after harvest.

Winona County, Minn.—Injured in stack by rains.

Goodhue County, Minn.—Both spring and winter varieties are of fine quality, with a yield better than that of last year.

Ramsey County, Minn.—All was No. 1 in quality, but rains have injured some in the stack.

Wabasha County, Minn.—Wheat in shock much injured by heavy rain, and not more than half the crop will pass inspection, while much will prove worthless.

Hardin County, Iowa.—Extreme drought shortened the crop.

Pocahontas County, Iowa.—The product was lessened by dry weather, but the quality superior.

Sac County, Iowa.—About one-fourth of last year's crop remains on hand.

Marshall County, Iowa.—The yield is less than was expected.

Muscatine County, Iowa.—Not a great yield, but good quality.

Floyd County, Iowa.—Not much old left over.

Montgomery County, Iowa.—Damaged some in stack by rains.

Clinton County, Iowa.—Quality this year No. 1. Very little old left over from last year, and its quality poor.

Linn County, Kans.—Looks well, but is a little late.

Franklin County, Kans.—Late sown, (and most was sown late,) looks well.

Jackson County, Kans.—A first-rate crop.

Morris County, Kans.—An excellent yield.

Coffey County, Kans.—Better yield in quality and quantity than anticipated. There will be an unusually large amount sown this fall.

Butler County, Kans.—Good quality, but yield less than expected.

Saline County, Kans.—Quality better and quantity less than was expected. One-half more old on hand than there was last year.

Leavenworth County, Kans.—Injured in the stack by rains.

Atchison County, Kans.—Injured in the stack by rains, except that which was thrashed early.

Jefferson County, Kans.—Army-worm and chinch-bug eating the early sown.

Gage County, Nebr.—A great amount spoiled in the stack by rains.

Jefferson County, Nebr.—Damaged a little in the stack by rain. Some winter wheat being sown as an experiment, and is looking well.

Cuming County, Nebr.—Lighter than usual, but acreage twice as large as last year.

Esmeralda County, Nev.—The quality is better than for three years past, and a larger production.

Plumas County, Cal.—Reduced quality and quantity on account of rust, but better than was expected before thrashing.

Alameda County, Cal.—Should the season prove favorable there will be a greater breadth sown than in any previous season.

Lake County, Cal.—An excellent crop, all thrashed.

Mendocino County, Cal.—Above an average in quality and quantity.

Marion County, Oreg.—All grains well harvested. Late sown injured by intense and continued heat, and hence the yield of such is light. Early sown fall and spring grain good. Straw heavy, but general yield small to the bulk of straw.

Douglas County, Oreg.—Quite a falling off in quantity from last year, in proportion to amount sown.

Benton County, Oreg.—A lighter crop than was anticipated.

Iron County, Utah.—Tappahannock wheat has done well.

Box Elder County, Utah.—Farmers are preparing to sow fall wheat extensively, as it escapes the grasshoppers.

San Pete County, Utah.—Very little spring wheat saved from the grasshoppers, and, though much land was replanted, the grain is still green, and frosts have already come.

Kane County, Utah.—Injured by grasshoppers. No old on hand.

Conchos County, Colo.—Not more than half the crop harvested. Six inches of snow on the ground.

Clalam County, Wash.—Owing to the very dry summer, spring-sown wheat was hardly worth the harvesting.

CORN.

York County, Me.—Three-fourths of the corn crop has been harvested in the best condition.

Oxford County, Me.—Good crop with few exceptions, and of excellent quality.

Strafford County, N. H.—Good yield, of first quality; much of the crop harvested.

Berkshire County, Mass.—Remarkable yield of good quality.

Norfolk County, Mass.—Some fields of extra quality, others inferior. General yield average, well ripened.

Plymouth County, Mass.—Many fields cut up and fed to the cattle; severe drought.

Washington County, R. I.—Season remarkably favorable for curing corn.

West Chester County, N. Y.—Good crop; not much injured by drought.

Dutchess County, N. Y.—Drought has injured corn on dry lands; crop not above an average.

Tioga County, N. Y.—Corn got such a fine start in June and July that it is up to an average, notwithstanding the drought.

Warren County, N. J.—Corn three weeks earlier than usual; quality good.

Cumberland County, N. J.—Season very dry. In some parts of the county the corn crop is almost entirely cut off, while in others there will be two-thirds to a full crop.

Indiana County, Pa.—Corn is in fine condition; all sound and dry.

Adams County, Pa.—The central portion of this county has suffered much from drought, and the corn crop is unusually short.

Warren County, Pa.—Crop harvested in fine condition.

Dauphin County, Pa.—Almost a failure on some farms, owing to drought.

Chester County, Pa.—Crop shortened by drought.

Luzerne County, Pa.—Drought has reduced the crop.

Clearfield County, Pa.—Superior crop, ripe and sound.

St. Mary's County, Md.—Injured and in some cases destroyed by the drought.

Baltimore County, Md.—Early corn, good; late, injured by drought; crop one-tenth short of an average.

Town Point, Md.—Crop very good, though some complain of rather poor return, blaming the weather, season, &c., when the real causes are lack of manure and insufficient cultivation.

Cecil County, Md.—Early planted corn on dry land is excellent; on wet land it was injured by wet weather early in the season. Late planted injured by drought. Crop above an average.

Washington County, Md.—Crop better than expected. In some parts never better.

Henrico County, Va.—Early corn better than last; late corn utterly worthless, owing to drought.

Northumberland County, Va.—Severely affected by drought. Larger acreage, however, which will make fully two-thirds of an average crop.

Princess Anne County, Va.—Complete failure in some parts of the county, owing to high tides in June, succeeded by drought.

Spottsylvania County, Va.—Full average crop.

Clarke County, Va.—Very good in some portions of the county; in others much injured by the drought.

Norfolk County, Va.—Three-fourths of a crop; drought.

Prince Edward's County, Va.—At least twenty per cent. better than last year.

King George County, Va.—Limited sections have had rains sufficient to make a fair average crop. Very little made in other parts of the county. The general crop about equals the short yield of last year.

Rockbridge County, Va.—Large quantity of corn injured on river bottoms by the freshet, so that stock will not eat it.

Henry County, Va.—A full crop, though many fields have not been well cultivated.

Lincoln County, N. C.—Seventy-five per cent. better than last year.

Gaston County, N. C.—A full crop.

Currituck County, N. C.—In some localities the corn crop is good, in others inferior; the yield will be a fair average.

Carteret County, N. C.—Heaviest crop ever raised in this county.

Duplin County, N. C.—Most planters have raised an abundance of corn.

Anson County, N. C.—A good crop.

Stanley County, N. C.—Crop materially injured by drought on upland.

Caldwell County, N. C.—Considerable rotten corn, owing to wet weather.

Davidson County, N. C.—Crop over an average.

Halifax County, N. C.—An unusually short crop, owing to heavy rains in June and poor cultivation. The acreage is also less than last year.

Abbeville County, S. C.—Two tenths better than last year.

Greenville County, S. C.—Injured by dry weather in July.

Chester County, S. C.—Corn generally good, except in bottom lands.

Lexington County, S. C.—Much better than last year.

Richland County, S. C.—Crop above average, except on the best corn lands, where it falls below.

Clay County, Ga.—Ten per cent. better than last year.

Schley County, Ga.—Plenty of corn for this county.

Jackson County, Ga.—Best crop for many years. Enough in the county to last two years.

Heard County, Ga.—Decidedly better than last year.

Crawford County, Ga.—Favorable late season has increased the crop beyond expectation.

Clayton County, Ga.—Corn injured first by wet weather in June, then by drought in July and August, and also through want of proper culture, owing to the uncertainty of labor.

Baldwin County, Ga.—The corn production will closely approximate the wants for home consumption. That of last year fell far short of it.

Colquitt County, Ga.—Good crop gathered, in good condition.

Franklin County, Ga.—Fifty per cent. better than last year.

White County, Ga.—An unusually fine crop.

Carroll County, Ga.—Crop exceeds any known before.

Mercer County, Ala.—Crop equal to last year.

Morgan County, Ala.—On uplands double the crop of last year. On low lands no better than last year, in consequence of excessive rains.

Greene County, Ala.—Crop being rapidly consumed. Barely possible that enough will be gathered for home consumption.

Dallas County, Ala.—Yield per acre 10 per cent. less than last year, and inferior in quality.

Lauderdale County, Miss.—Crop not so large in yield or acreage as in former years.

Grenada County, Miss.—The crop a fair average, but scarcely enough to supply the county.

Holmes County, Miss.—In the valley sections corn is magnificent, but taking the county over there will hardly be enough for home consumption.

Madison Parish, La.—Yield 50 per cent. above that of last year.

Washington Parish, La.—Crop largely in excess of that of last year in consequence of increased acreage.

Jackson County, Fla.—Average yield, but decreased acreage.

Leon County, Tex.—Corn is turning out better than anticipated.

Red River County, Tex.—Crop inferior to that of last year.

Upshur County, Tex.—Increased product; crops have been better worked than heretofore.

Crawford County, Ark.—The corn crop is above that of last year, which was rather above an average.

Independence County, Ark.—The crop has not been surpassed in quality or quantity in fifteen years.

Dyer County, Tenn.—Superior to any crop for years.

Humphreys County, Tenn.—Best crop for years.

Nicholas County, W. Va.—Crop never better.

Brooke County, W. Va.—Harvested in excellent condition.

Ohio County, Ky.—In fine condition.

Lincoln County, Ky.—Out of danger of frost.

Boyle County, Ky.—Crop will be saved in good condition.

Jefferson County, Ky.—All crops in favorable condition.

Clinton County, Ky.—Never much better.

Shelby County, Ky.—Doing finely and in no danger of early frost.

Jackson County, Ky.—The prospect of a good crop is better than in ten years.

McCracken County, Ky.—A finer crop than any since 1855.

Clay County, Mo.—Standing corn much injured by rain.

Polk County, Mo.—Injured slightly by army worm.

Holt County, Mo.—The unmaturing crop is threatened with rot on account of excessive rains.

Texas County, Mo.—The crop is good, but considerably damaged by a worm working in the ear.

Barton County, Mo.—Considerably injured by rain.

Mississippi County, Mo.—The crop is fine.

Shelby County, Mo.—Good quality, fair yield per acre, and acreage larger than common.

Daviess County, Mo.—Is beginning to grow and rot as it stands in the field.

Montgomery County, Mo.—There will be little corn to ship.

Stoddard County, Mo.—All crops a little better than an average.

Linn County, Mo.—The crop is coming out much better than was expected two months ago.

Rock Island County, Ill.—The fall has been favorable for ripening corn.

St. Clair County, Ill.—Excellent and plentiful.

Peoria County, Ill.—Helped by late rains, and ripened perfectly.

Fayette County, Ill.—Splendid crop.

Sangamon County, Ill.—Condition 20 per cent. above average.

Boone County, Ill.—Ripening well, and an average crop.

Macon County, Ill.—Injured by chinch bugs and drought.

Piatt County, Ill.—Injured by chinch bugs to the extent of five bushels to the acre.

Granby County, Ill.—Ripe and sound, but less in quantity than anticipated, on account of drought.

Tazewell County, Ill.—Good quality and fair yield.

Du Page County, Ill.—Cut for fodder to an unwonted extent.

Putnam County, Ill.—Has improved very much within the last month.

Stephenson County, Ill.—An abundant crop.

De Kalb County, Ill.—Never so large an area by one-fourth planted in Illinois, and the crop has attained perfection.

Franklin County, Ind.—Ripe very early.

Posey County, Ind.—Above an average crop.

Marion County, Ind.—Unusually well ripened.

Union County, Ind.—The best crop produced in five years.

Warren County, Ind.—Crop unusually good and forward.

Miami County, Ind.—Never so good a general crop as this year.

Lawrence County, Ind.—An abundant crop, finely matured.

Madison County, Ind.—More than an average crop, maturing finely.

Daviess County, Ind.—The largest crop ever raised in the county, and the best in quality.

Tippecanoe County, Ind.—The best crop ever raised in this county.

Hendricks County, Ind.—Best crop in twenty years.

Noble County, Ind.—We never had better corn.

White County, Ind.—Best crop ever raised in this county.

Hardin County, Ohio.—Good beyond expectation.

Lake County, Ohio.—Looks badly on all lowlands, where the best is usually grown.

Mahoning County, Ohio.—The crop is excellent.

Harrison County, Ohio.—In much dryer condition than usual.

Marion County, Ohio.—Ripened well, and the average better than was expected.

Monroe County, Ohio.—The heaviest crop I ever saw.

Union County, Ohio.—Nearly all cut, and will cure in prime condition.

Auglaize County, Ohio.—As good a crop as ever heretofore.

Noble County, Ohio.—The crop is maturing finely.

Medina County, Ohio.—Crop mostly cut, in splendid condition.

Athens County, Ohio.—Cut short by drought.

Emmet County, Mich.—The best crop ever harvested in this county, and a month earlier than usual.

Calhoun County, Mich.—The finest crop for many years.

Ottawa County, Mich.—A good crop.

Washtenaw County, Mich.—Much better crop than that of last year, on account of soundness.

Green Lake County, Wis.—Crop ripened well.

Green County, Wis.—Unsurpassed in quality and quantity; as large as we have had in many years.

Fond du Lac County, Wis.—The best crop for twenty years.

Dane County, Wis.—An excellent crop.

Outagamie County, Wis.—The best crop ever raised in the county.

Cass County, Minn.—Above an average crop, and all ripe and cared for.

Watonwan County, Minn.—Good crop.

Freeborn County, Minn.—An average crop.

Winona County, Minn.—Ripened perfectly.

Goodhue County, Minn.—Season unusually favorable, and crop perfectly ripe.

Ramsey County, Minn.—More planted than usual, and best crop in many years.

Hardin County, Iowa.—Excellent in quality, but deficient in quantity.

Cherokee County, Iowa.—Few pieces will exceed 10 bushels to the acre.

Mahaska County, Iowa.—Maturing finely.

Dallas County, Iowa.—Molding slightly in the field on account of wet weather.

Washington County, Iowa.—Early planted not half a crop.

Jackson County, Iowa.—More than an average yield of first quality.

Marion County, Iowa.—Much injured by wet weather.

Marshall County, Iowa.—Ripening well, but a large portion of the ears never filled.

Muscataine County, Iowa.—Not more than four-fifths of an average crop.

Jasper County, Iowa.—Well matured, sound, and good.

Des Moines County, Iowa.—The crop is light.

Floyd County, Iowa.—An average crop per acre, and about twenths increase of acreage.

Appanoose County, Iowa.—Nearly double the crop of last year.

Deatur County, Iowa.—An immense crop; twice as large as any previous crop in this county.

Jackson County, Kans.—Much better than was anticipated after the injury in July and August from drought.

Butler County, Kans.—A fair crop in the south and a light one in the north part of our county.

Saline County, Kans.—Injured by summer drought.

Leavenworth County, Kans.—Improved by late rains.

Atchison County, Kans.—Injured by drought, and smutty.

Jefferson County, Kans.—Damaged in the shock by wet weather.

Shawnee County, Kans.—Improved by late rains.

Republic County, Kans.—Very poor, on account of drought.

Gage County, Nebr.—Nearly a full crop.

Nemaha County, Nebr.—Injured somewhat by rains.

Cass County, Nebr.—Badly injured by rains.

Jefferson County, Nebr.—Damaged a little by rain.

Douglas County, Oreg.—Corn that was well put and well cultivated is fully up to an average, but much of it was poorly put in, and not well cultivated.

Lane County, Oreg.—A full average crop.

Esmeralda County, Nev.—Largest crop for the past three years. Quality superior.

Box Elder County, Utah.—Very good crop.

Gallatin County, Mont.—Heavy frosts in August materially injured nearly all cereal crops in some of the valleys, particularly the Gallatin

COTTON.

Hertford County, N. C.—Cotton-picking just begun; a few bales sent to market. Farmers say that, with all the fine growth, they will not make more than an average crop. Bolls small; many faulty or rotten. A few farmers last year made a bale to the acre with a much smaller growth of wood. One farmer will gather 1,500 pounds seed cotton per acre from 50 acres, if the crop is not injured by early frost. Our correspondent says that, with the annual improvement in implements and culture, he is satisfied that 2,000 pounds will soon be produced on the best farms.

Chowan County, N. C.—The late cool weather has given cotton the rust, and nearly ruined late crops. Of early crop, loss at least one-third.

Pasquotank County, N. C.—If frost should keep off until November 1, considerably above an average crop will be raised.

Perquimans County, N. C.—Cotton being injured by rust, particularly where guano and other purchased fertilizers were used.

Gaston County, N. C.—Cotton good; opening well; appearances generally favorable.

Lincoln County, N. C.—A crop of 20 per cent. over that of last year promised.

Montgomery County, N. C.—Owing to excessive drought, many of the late blooms and forms have fallen, and much cotton has opened before maturity.

Sampson County, N. C.—Stalk much taller than ever before, but not balled in proportion. Crop will be excellent.

Jones County, N. C.—The growth is much better than last year, but not so well balled; neither is the crop so early by three weeks, and in the event of early frost the yield will be less than last year.

Stanley County, N. C.—Cotton opened early, is free from injurious insects, and is yielding a fine staple.

Anson County, N. C.—Owing to the rust, the crop will not be much greater than last year.

Green County, N. C.—Crop injured by drought and rust. Six-tenths of a crop. Young bolls falling.

Duplin County, N. C.—Not more than two-thirds of last year's yield to the acre. August rains caused shedding of bolls. Rust almost universal. The fertilizers used have not generally paid. This, combined with low price of cotton, makes a gloomy prospect for the planter. Many will not clear expenses; and where one has devoted himself entirely, or nearly so, to cotton, he is ruined.

Martin County, N. C.—The prospect for cotton has very much changed since the September report, owing to the hot weather and heavy rains. Although the acreage is much larger than last year, the present indications are that the product will be less.

Mecklenburg County, N. C.—About the same acreage as last year. Will not yield as well in some portions of the county.

Carteret County, N. C.—A heavy crop expected, but a portion will be lost, as the heavy rains prevent picking.

Halifax County, N. C.—Crop injured by wet weather. Yield, one-fourth less per acre than last year, but the increased acreage will make the aggregate product an average.

York County, S. C.—Crop considerably injured by the drought in August.

Chester County, S. C.—Cotton greatly injured by drought.

Lexington County, S. C.—A falling off in cotton since September report.

Orangeburg County, S. C.—Cotton failed considerably in August and has not recovered.

Richland County, S. C.—Injured by hot weather in September and now suffering from excessive rains.

Spartansburg County, S. C.—All the later blooms and many small bolls dried up. There will be no late cotton. Crop much less than expected a month ago.

Newberry County, S. C.—Cut short by fall drought. Twenty per cent. less yield than last year.

Wilkinson County, Miss.—On hill lands the crop has been much injured by the hot, dry weather. Bottom land crops not so much damaged. On hill lands one-half the crop gathered. On a large proportion there will be no late picking.

West Feliciana Parish, La.—Owing to the excessive rains and hot weather in August the cotton shed its forms badly. The weather in September has been very dry, causing the bolls to open very rapidly, and checking the growth of the late planting.

Madison Parish, La.—Prospect good. If the season proves as good as the last for picking the yield will be at least 25 per cent. better than last year.

East Feliciana Parish, La.—A great falling off in the crop, owing to excessive rains in some localities and drought in others. Less top crop than for years. Fields red with rust. Bolls opening rapidly.

Tangipahoa Parish, La.—Weather favorable, but there will be a very light top crop on account of late drought.

Rapides Parish, La.—The worms had stripped the cotton plant by the 15th ultimo. The middle crop dropped off in consequence of the rains in the early part of August. Owing to scarcity of labor it is feared that much of the crop now open will be lost.

Iberia Parish, La.—The season for cotton never excelled. Opening as rapidly as can be gathered. The product will be at least 40 per cent. above that of last year.

Avoyelles Parish, La.—Owing to injury by caterpillars and late continuous rains, there will not be much over half a crop of cotton in this parish.

Morehouse Parish, La.—Greatly injured by August rains, and will be reduced one-third thereby. Fully two-thirds of the crop now open.

Washington Parish, La.—Yield per acre not likely to be greater than last year, but the acreage is largely increased.

Union Parish, La.—Crop reduced one-fourth to one-third from the amount promised August 1.

Tensas Parish, La.—The caterpillar and "dry rot" have cut down the crop considerably, but still there is as much as can be gathered by the available force.

Lamar County, Tex.—Continued rains have reduced the prospect for a heavy yield. The lint is of fair quality. Crop maturing early.

Leon County, Tex.—The worm is doing considerable damage in some portions of the county, and it is feared there will be a reduced crop.

Kendall County, Tex.—Cotton will average a bale to the acre in this county.

Smith County, Tex.—The past month has been favorable for cotton. Worms not in sufficient numbers to shorten the crop. The luxuriant growth of the wood has deceived many in estimating the product. The number of bolls is about an average, while the plant is more than double the usual size. Topping the plant has well repaid the labor—not topping alone, but shortening all redundant growth, causing the growth of fruit limbs instead.

Williamson County, Tex.—Promising, with few exceptions. Quality above an average.

Rusk County, Tex.—An average crop will be gathered.

Upshur County, Tex.—About the same as last year. Not as good as expected; injured by boll worm.

Milam County, Tex.—Heavy crop; more than can be gathered. Labor scarce. Crop will average 300 pounds lint cotton to the acre.

Grayson County, Tex.—Crop late, and will be short unless the fall should be late.

Red River County, Tex.—Owing to the rains of August and the boll worms, there will be only about half a crop.

Galveston County, Tex.—The caterpillar appeared September 1 in destructive numbers. About half a crop of cotton will be made.

Fannin County, Tex.—Pickers are gathering 100 to 200 pounds per day for good hands.

Anderson County, Tex.—Although the crop is above that of last year there is a material diminution in the quantity of cotton picked up to date; perhaps 25 per cent.

Ellis County, Tex.—Crop fully up to expectations.

Jackson County, Fla.—The acreage in cotton is greater than last year, and fertilizers have been more liberally used. The use of guano has not answered expectations. It hastens the maturity of the plant, however, and to some extent relieves it from the depredations of the caterpillar. Four-tenths of the crop have been picked.

Liberty County, Fla.—Rust injured cotton 3 per cent.

Leon County, Fla.—Dry September favorable for cotton.

Putnam County, Fla.—A good average crop. No worms.

Levy County, Fla.—Better than usual. The army-worm not so troublesome as in former years.

Sebastian County, Ark.—Cotton was never better in this county. The yield will be large. The bottom crop is well opened, and wet weather does not often injure the middle or top crop.

Crawford County, Ark.—Rather too much rain for cotton on the heavy, rich river bottoms, the young bolls rotting to considerable extent, though the general crop is above an average.

Pulaski County, Ark.—Condition 10 per cent. below an average.

Union County, Ark.—The wet weather in August has caused the small bolls to fall off, thus materially reducing former estimates for this county.

Independence County, Ark.—The crop, in quantity and quality, not surpassed within fifteen years.

Giles County, Tenn.—Cotton is too rank. The crop depends on the length of the season.

McNairy County, Tenn.—The fall has been favorable to cotton thus far.

Dyer County, Tenn.—Crop promising a good yield.

McCracken County, Ky.—The small acreage looks particularly fine.

Kane County, Utah.—Crop injured by grasshoppers.

RYE, OATS, AND BARLEY.

Oxford County, Me.—Oats in many places have felt the effects of the drought, being pinched and of poor quality.

Franklin County, Me.—Rye and oats below an average, owing to the drought.

Waldo County, Me.—Grain crops suffered severely for want of rain.

Norfolk County, Mass.—Rye, oats, and barley up to a good average in quantity and quality.

Clearfield County, Pa.—Fair crops of oats and grass.

Clarke County, Va.—Oats not up to the promise. Grasshoppers cut off the heads both before and after maturity.

Prince William County, Va.—Crops of all kinds, except oats, fall much short of previous estimates, especially late crops, owing to the drought.

Wilkinson County, Miss.—On hill lands the crop has been much injured by the hot, dry weather. Bottom land crops not so much damaged. On hill lands one-half the crop gathered. On a large proportion there will be no late picking.

West Feliciana Parish, La.—Owing to the excessive rains and hot weather in August the cotton shed its forms badly. The weather in September has been very dry, causing the bolls to open very rapidly, and checking the growth of the late planting.

Madison Parish, La.—Prospect good. If the season proves as good as the last for picking the yield will be at least 25 per cent. better than last year.

East Feliciana Parish, La.—A great falling off in the crop, owing to excessive rains in some localities and drought in others. Less top crop than for years. Fields red with rust. Bolls opening rapidly.

Tangipahoa Parish, La.—Weather favorable, but there will be a very light top crop on account of late drought.

Rapides Parish, La.—The worms had stripped the cotton plant by the 15th ultimo. The middle crop dropped off in consequence of the rains in the early part of August. Owing to scarcity of labor it is feared that much of the crop now open will be lost.

Iberia Parish, La.—The season for cotton never excelled. Opening as rapidly as can be gathered. The product will be at least 40 per cent. above that of last year.

Arcyelles Parish, La.—Owing to injury by caterpillars and late continuous rains, there will not be much over half a crop of cotton in this parish.

Morehouse Parish, La.—Greatly injured by August rains, and will be reduced one-third thereby. Fully two-thirds of the crop now open.

Washington Parish, La.—Yield per acre not likely to be greater than last year, but the acreage is largely increased.

Union Parish, La.—Crop reduced one-fourth to one-third from the amount promised August 1.

Tensas Parish, La.—The caterpillar and "dry rot" have cut down the crop considerably, but still there is as much as can be gathered by the available force.

Lamar County, Tex.—Continued rains have reduced the prospect for a heavy yield. The lint is of fair quality. Crop maturing early.

Leon County, Tex.—The worm is doing considerable damage in some portions of the county, and it is feared there will be a reduced crop.

Kendall County, Tex.—Cotton will average a bale to the acre in this county.

Smith County, Tex.—The past month has been favorable for cotton. Worms not in sufficient numbers to shorten the crop. The luxuriant growth of the wood has deceived many in estimating the product. The number of bolls is about an average, while the plant is more than double the usual size. Topping the plant has well repaid the labor—not topping alone, but shortening all redundant growth, causing the growth of fruit limbs instead.

Williamson County, Tex.—Promising, with few exceptions. Quality above an average.

Rusk County, Tex.—An average crop will be gathered.

Upskur County, Tex.—About the same as last year. Not as good as expected; injured by boll worm.

Milam County, Tex.—Heavy crop; more than can be gathered. Labor scarce. Crop will average 300 pounds lint cotton to the acre.

Grayson County, Tex.—Crop late, and will be short unless the fall should be late.

Red River County, Tex.—Owing to the rains of August and the boll worms, there will be only about half a crop.

Galveston County, Tex.—The caterpillar appeared September 1 in destructive numbers. About half a crop of cotton will be made.

Fannin County, Tex.—Pickers are gathering 100 to 200 pounds per day for good hands.

Anderson County, Tex.—Although the crop is above that of last year there is a material diminution in the quantity of cotton picked up to date; perhaps 25 per cent.

Ellis County, Tex.—Crop fully up to expectations.

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Clearfield County, Pa.—Fair crops of oats and grass.

Clarke County, Va.—Oats not up to the promise. Grasshoppers cut off the heads both before and after maturity.

Prince William County, Va.—Crops of all kinds, except oats, fall much short of previous estimates, especially late crops, owing to the drought.

Wythe County, Va.—Rye injured in the stack. Oats light in weight, owing to late seeding.

Washington County, Va.—Increased oat crop, but quality inferior.

Anson County, N. C.—Good crop of oats.

Caldwell County, N. C.—Quality of oats much injured by wet weather in harvesting.

Jackson County, Ga.—A good yield of oats.

Monroe County, W. Va.—Heavy falling off in oats both in quality and quantity.

Russell County, Ky.—Oats have not turned out as well as we expected. About 20 per cent. more than last year.

Mississippi County, Mo.—Oats a good crop.

Cass County, Mo.—Barley almost destroyed by chintz bugs. Oats damaged to some extent.

Pope County, Ill.—More than the usual quantity, but not so heavy.

Boone County, Ill.—Oats almost an entire failure.

Bureau County, Ill.—A small yield of oats; quality good.

De Kalb County, Ill.—Less than half a crop of barley.

Lake County, Ohio.—A poor yield compared with that of 1869. Barley also yields less, but is secured in better condition.

Emmet County, Mich.—Oats considerably better than in former years.

Calhoun County, Mich.—Oats and barley extra crops.

Washtenaw County, Mich.—Oat crop superior to last year.

Green Lake County, Wis.—A light crop of oats.

Waukesha County, Wis.—Oats in every respect a poor crop.

Portage County, Wis.—Oats ruined by drought.

Blue Earth County, Minn.—Oats injured by a hail storm.

Watson County, Minn.—Oats, small yield and poor quality.

Freeborn County, Minn.—A light crop of oats.

Goodhue County, Minn.—Oats suffered from drought, but the quality is good.

Hardin County, Iowa.—Oat crop shortened by drought.

Muscatine County, Iowa.—Barley has done ordinarily well, and the quality is excellent. Oats are poor and light.

Montgomery County, Iowa.—Oats damaged a little in stack by rains.

Clinton County, Iowa.—Oats light, owing to drought.

Esmeralda County, Nev.—Barley and oats superior to any crop for the last three years.

Douglas County, Oreg.—A great falling off in oats and barley in proportion to last year, and quality not so good.

Clallam County, Wash.—Oats and barley crops reduced by the dry summer.

BUCKWHEAT, SORGHUM, ETC.

Norfolk County, Mass.—Very good crop of beans. Turnips may yet be much improved.

Berkshire County, Mass.—Less buckwheat than usual sown; straw heavy, but heads poorly filled.

Essex County, Mass.—Onion crop reduced by the drought; squashes lighter than for years; garden seeds have perfected well, except on very dry lands.

Suffolk County, N. Y.—Buckwheat, beans, peas, indeed all crops except tobacco, sorghum, and sweet potatoes, injured by the dry, hot weather. A small worm is injuring the cabbage very much.

Tioga County, N. Y.—Buckwheat injured by the drought.

Columbia County, N. Y.—Buckwheat injured by drought.

Warren County, N. J.—Buckwheat well set, but very light grain. Crop very short.

Hudson County, N. J.—The drought has injured peas and beans.

Cumberland County, Pa.—Short crops of grain and of inferior quality.

Bedford County, Pa.—The drought has cut short the buckwheat, hastened the maturity of corn, and almost destroyed the fall feed. Many have begun to fodder cattle. On the whole the season has been a prosperous one.

Perry County, Pa.—Turnip crop a failure; destroyed by dry weather and the grasshoppers. Pumpkins also a failure.

Columbia County, Pa.—Buckwheat injured by drought.

Luzerne County, Pa.—The dry weather has shortened the buckwheat crop.

Clearfield County, Pa.—Buckwheat sun-killed.

Indiana County, Pa.—About four-fifths of the buckwheat was caught in the rain after being cut, and is much damaged, unfit for family use. It may answer for feed. One-fifth harvested in good order.

Baltimore County, Md.—Buckwheat blighted by drought and heat.

Alexandria County, Va.—About half a crop of buckwheat.

Montgomery County, N. C.—Owing to excessive drought the sorghum and the pea crop have been cut short.

Anson County, N. C.—The pea-nut crop cut off by the September drought.

New Hanover County, N. C.—Pea-nuts grown extensively; crop above average in quality, but below in quantity.

Stanly County, N. C.—Good yield of superior sirup from sorghum, the dry weather tending to concentrate the juice.

Richland County, S. C.—A good crop of peas.

Union County, S. C.—More attention is being paid to sorghum than for several years past.

Chattooga County, Ga.—Sorghum excellent, except that which is termed the black seed, which is ruined by rust.

Etowah County, Ala.—Decreased acreage in peas, owing to scarcity of seed in the spring, but quality good.

Carroll County, Ga.—Peas better than for years.

Greene County, Tenn.—Sorghum promised well until nearly matured, when, owing to wet weather, it fell to considerable extent, and a black rust rotted the blades and seeds. The quality of the juice is poor and the sirup inferior.

Perry County, Tenn.—Pea-nuts better than anticipated, but rain interferes with digging. First crop of broom-corn this year.

Humphreys County, Tenn.—Pea-nut crop short in acreage, but promising.

Mississippi County, Mo.—An increasing production of sorghum.

Boone County, Ill.—Sorghum excellent, though not a great production.

Grundy County, Ill.—About half the buckwheat sown came up and looks extremely well.

Bureau County, Ill.—Buckwheat looks uncommonly well.

Ohio County, Ind.—A short crop of buckwheat.

Warren County, Ind.—A small crop of buckwheat.

Washtenaw County, Mich.—Buckwheat unusually good as to quantity and quality.

Monroe County, Iowa.—Sorghum is in excellent condition, but very little is raised.

Marion County, Iowa.—Buckwheat still in blossom. Will be a heavy yield if the crop ripens well.

Muscatine County, Iowa.—Buckwheat in blossom. An average acreage and good stand.

Coffee County, Kansas.—Buckwheat promises a fine crop.

Woodson County, Kansas.—The acreage of buckwheat is double that of any former year.

Box Elder County, Utah.—Sorghum promises to be very fine.

POTATOES.

Piscataquis County, Me.—Potatoes about an average crop.

York County, Me.—Three-fourths of the crop has been housed in the best condition.

Oxford County, Me.—Nearly worthless in western part of the county, while in the eastern portion and in the intervalles of the Androscoggin the crop is good and of fine quality.

Sagadahoc County, Me.—Crop injured by drought.

Franklin County, Me.—Excellent in quality.

Strafford County, N. H.—Crop seriously affected by the drought. Product light, but quality never better.

Bellknop County, N. H.—Crop generally light.

Berkshire County, Mass.—Though a failure in many sections, potatoes have done well here, considering the season. Quality excellent.

Norfolk County, Mass.—Early crop fair. The late crop not more than one-fourth an average yield.

Essex County, Mass.—Crop reduced by drought.

Plymouth County, Mass.—Many fields not worth digging.

West Chester County, N. Y.—Dry weather has injured late potatoes.

Columbia County, N. Y.—Suffered from drought.

Warren County, N. Y.—The rains in September and the delay of frosts have made potatoes better than expected.

Hudson County, N. J.—Injured by drought.

Cumberland County, N. J.—Round potatoes very poor. The crop of sweet potatoes unprecedentedly large, some farmers having dug single hills yielding 10, 12, and 14 pounds.

Cumberland County, Pa.—About half a crop.

Perry County, Pa.—Almost a failure, owing to drought. Sweet potatoes have done better.

Columbia County, Pa.—Severely injured by drought.

Warren County, Pa.—Large crop; no rot.

Lancaster County, Pa.—About one-fourth usual crop.

Adams County, Pa.—Unusually short crop; drought.

Wyoming County, Pa.—Hardly half a crop.

Chester County, Pa.—Crop reduced by drought.

Luzerne County, Pa.—Short crop; drought.

Clearfield County, Pa.—Full crop of good quality.

Northumberland County, Pa.—An unusually small crop owing to long dry summer.

Elk County, Pa.—The best crop for many years.

Kent County, Del.—The dry weather has cut short the late potato crop, nearly, if not quite, one-half.

Baltimore County, Md.—The striped potato bug destructive in many localities. Grasshoppers also numerous.

St. Mary's County, Md.—Late potatoes and turnips seriously injured by drought.

- Henrico County, Va.*—Early potatoes very good crop. Few late ones.
- Alexandria County, Va.*—Half a crop, owing to drought.
- Northumberland County, Va.*—Late crop nearly ruined by drought.
- Sweet potatoes short crop. Turnips a total failure.
- Spottsylvania County, Va.*—Potatoes a failure.
- Lincoln County, N. C.*—In a single instance in this county 16½ pounds of the Early Goodrich potato yielded 21 bushels.
- Currituck County, N. C.*—Sweet potatoes considerably over an average crop.
- Stanly County, N. C.*—Root crops scarcely half an average.
- Georgetown County, S. C.*—Sweet potatoes a failure.
- Brooks County, Ga.*—Potatoes and peas much injured by the drought.
- Dooly County, Ga.*—Sweet potatoes very promising.
- Jackson County, Fla.*—Sweet potatoes less promising than last year ; decreased acreage.
- Liberty County, Fla.*—Potato crop reduced one-half by drought.
- Dyer County, Tenn.*—Crop better than for many years.
- Braxton County, W. Va.*—Generally very good.
- Brooke County, W. Va.*—A very poor crop.
- Linn County, Mo.*—The crop is coming out much beyond our anticipations.
- Mississippi County, Mo.*—Fully up to our high mark.
- Shelby County, Mo.*—A fair crop.
- St. Louis County, Mo.*—Late ones almost destroyed by potato bugs.
- La Salle County, Ill.*—Very much damaged by potato bugs.
- Rock Island County, Ill.*—Condition favorable.
- McDonough County, Ill.*—Late planted doing finely.
- Marion County, Ill.*—Injured by summer drought.
- Fayette County, Ill.*—A fair crop.
- Boone County, Ill.*—In some parts not enough for seed.
- Macon County, Ill.*—Except early ones, nearly a failure.
- Du Page County, Ill.*—Very early potatoes did moderately well ; late ones are nearly a failure.
- Bureau County, Ill.*—Will be a fair yield, but not of the best quality.
- Putnam County, Ill.*—Will not be much more than half an average crop.
- Lake County, Ill.*—Nearly destroyed by potato bugs.
- Carroll County, Ind.*—The crop is almost an entire failure.
- Posey County, Ind.*—Late potatoes very scarce.
- White County, Ind.*—Suffered severely from bugs and drought.
- Ohio County, Ind.*—A short crop.
- Miami County, Ind.*—Bugs have destroyed the vines, and are now working on the tubers.
- Tippecanoe County, Ind.*—Nearly a failure, on account of bugs.
- Noble County, Ind.*—Much injured by bugs.
- Martin County, Ind.*—Sweet potatoes unusually productive ; others very much injured by bugs.
- Henry County, Ohio.*—Very light crop.
- Athens County, Ohio.*—Cut short by drought.
- Hardin County, Ohio.*—Not a large yield, on account of drought, but quality good.
- Lake County, Ohio.*—Not more than one-fourth of an average yield.
- Union County, Ohio.*—Scarce, owing to the dry season.
- Auglaize County, Ohio.*—Greatly injured by bugs.
- Noble County, Ohio.*—Not so good a crop as last year.
- Medina County, Ohio.*—A medium crop of excellent quality.

- Logan County, Ohio.*—About four-fifths of an average crop.
Emmet County, Mich.—Excellent, and a heavy crop.
Bay County, Mich.—Being injured by bugs.
Culhoun County, Mich.—Three-tenths destroyed by bugs.
Van Buren County, Mich.—Injured by drought.
Ottawa County, Mich.—A sound, average crop.
Washtenaw County, Mich.—Much injured by bugs.
Walworth County, Wis.—Nearly a failure.
Green County, Wis.—Nearly ruined by bugs.
Waukesha County, Wis.—Mostly destroyed by potato bugs.
Cass County, Minn.—An excellent crop.
Blue Earth County, Minn.—Nearly ruined by drought and bugs.
Freeborn County, Minn.—Badly injured by bugs.
Winona County, Minn.—Much injured by bugs and drought.
Goodhue County, Minn.—Injured more than ever by bugs.
Monongalia County, Minn.—The potato bug has nearly destroyed the crop.
Ramsey County, Minn.—Mostly eaten by the bugs. Not one-fourth of an ordinary crop.
Hardin County, Iowa.—Potato crop shortened by drought.
Hancock County, Iowa.—Much better than was expected.
Washington County, Iowa.—Late planted are very fine.
Jackson County, Iowa.—Early varieties meager. Others, especially the peach blow, yield finely.
Marion County, Iowa.—Now in blossom and thrifty as in July.
Muscatine County, Iowa.—There will be a larger crop than that of last year if frost holds off.
Floyd County, Iowa.—Inferior in size, and not over three-tenths of the usual quantity.
Washington County, Kans.—There will be a medium crop.
Jackson County, Kans.—Will be a good crop if rot does not set in after so much rain.
Coffey County, Kans.—Late ones promise a fine crop.
Saline County, Kans.—Very much injured by drought.
Jefferson County, Kans.—Late ones growing finely.
Esmeralda County, Nev.—Potatoes better than for three years.
Lincoln County, Nev.—An entire failure.
Douglas County, Oreg.—Not more than half the usual crop.
Clallam County, Wash.—Crop reduced by dry weather.

TOBACCO.

- Lancaster County, Pa.*—Heavy crop; prime lots selling to New York agents at 20 cents per pound.
Madison County, Va.—The tobacco crop is unusually heavy—harvested early.
Prince Edwards County, Va.—Crop forward and mostly housed.
Henry County, Va.—Crop mostly cut and cured. Best crop in many years, both in quality and quantity.
Lincoln County, N. C.—The crop promises to be 15 to 20 per cent. better than last year.
Forsyth County, N. C.—Tobacco very fine.
Alamance County, N. C.—Crop fine in quality and quantity; 50 per cent. more than last year in the county.
Franklin County, Ky.—Ripened well.
McCracken County, Ky.—Worms have been very injurious.

Monroe County, Ohio.—Cured in better condition than usual.

Noble County, Ohio.—Being housed in fine condition; and quality better than last year.

Robertson County, Tenn.—Crop in the barn in fine condition; large leaf and good color.

Monroe County, W. Va.—Finest crop ever grown in the county. The ripening season being warm and dry, with heavy fogs, caused the leaves to thicken up and accumulate a large amount of gum. Product all housed and 25 per cent. in excess of any crop since the war.

RICE.

Glynn County, Ga.—The rice crop is good, average crop. The harvest, which is now nearly finished, has been favorable, and a prime article will be sent to market. The acreage is less than last year, but the crop has been better attended. Negro labor is becoming more settled and planters can form a very just opinion as to the amount of work they can get done during the season.

Plaquemines County, La.—The dry weather of September has been most propitious for the rice harvest, which is progressing rapidly to a close. The yield is not a full one, but the crop is being saved in prime condition.

PASTURES, ETC.

Cumberland County, Me.—Hay and pastures are short, and the number of horses, cattle, and sheep will have to be reduced, to conform to the supply of feed.

Oxford County, Me.—Fields entirely destitute of grass; farmers feeding from the winter store, which is one-third short.

Sagadahock County, Me.—Feeding stock generally; drought continues.

Waldo County, Me.—Pastures have suffered severely from drought.

Stafford County, N. H.—The drought has dried up the fields and pastures; in some localities cattle are fed from the barn.

Hillsborough County, N. H.—Cattle being fed from the barn. Hay higher than ever before at this season.

Washington County, Vt.—Feed very short, owing to the continued drought.

Orange County, Vt.—Fall feed unusually short, and much hay will be fed before the usual time.

Plymouth County, Mass.—Pastures so dried up that cattle have to be fed at the barn.

Worcester County, Mass.—Very dry; feed scarce in pastures; feeding from barns commenced.

Westchester County, N. Y.—Dry weather has dried up the pastures.

Ulster County, N. Y.—Pastures and streams dried up.

Columbia County, N. Y.—Pastures short.

Warren County, N. Y.—Pasture meadows very brown. Many cattle will be sold for want of food.

Alleghany County, N. Y.—Feed in the fields very good; ground has not been very dry this year.

Hudson County, N. J.—Pastures injured by drought.

Essex County, N. J.—Pastures pretty much dried up.

Mercer County, N. J.—Pastures much injured by drought.

Huntingdon County, Pa.—Fall pastures very poor on account of the drought.

- Wyoming County, Pa.*—Meadows badly burned, and scarcely any new seeding in the county; stock foddered since 1st of August.
- Lawrence County, Pa.*—Pastures unusually good, and old stock in good condition.
- Town Point, Md.*—Much pasture injured by drought, which it is feared will be felt next year in diminished hay crop.
- Smith County, Tenn.*—Fall pastures much better than usual, owing to seasonable rains.
- Franklin County, Ky.*—Grass continues good, though rain is needed.
- Henry County, Mo.*—Pastures excellent.
- Harrison County, Mo.*—Fall pastures very fine.
- Polk County, Mo.*—Injured by army worm.
- Callaway County, Mo.*—Fine pastures and no frost.
- Putnam County, Mo.*—Fine, and no prospect of frost.
- Osage County, Mo.*—Destroyed by the army worm.
- Clarke County, Mo.*—The finest in ten years.
- Franklin County, Mo.*—Injured by drought.
- Wayne County, Ill.*—Being revived by rains.
- La Salle County, Ill.*—Feed is short.
- Rock Island County, Ill.*—As green as in May.
- McDonough County, Ill.*—Luxuriant as in spring.
- Lee County, Ill.*—Fresh and abundant.
- Bureau County, Ill.*—Feed is excellent.
- Stephenson County, Ill.*—Fall feed excellent.
- Jennings County, Ind.*—Very little fall feed.
- Boone County, Ind.*—Fresh and tender as in spring.
- Union County, Ind.*—Failed from drought.
- Lawrence County, Ind.*—Injured by drought.
- Madison County, Ind.*—Feed short, on account of drought.
- Randolph County, Ind.*—No fall pasture.
- Hendricks County, Ind.*—Dry weather and short pasture.
- Champaign County, Ohio.*—Entirely dried up.
- Harrison County, Ohio.*—Nearly dried up.
- Auglaize County, Ohio.*—Pastures dried up.
- Mercer County, Ohio.*—Injured by drought.
- Vinton County, Ohio.*—Pastures dried up, and cattle in poor condition.
- Crawford County, Ohio.*—Fall pastures light.
- Van Buren County, Mich.*—Shortened by drought.
- Ontonagon County, Wis.*—Feed never better.
- Dane County, Wis.*—Bright and good.
- Green County, Wis.*—Fall feed never better.
- Clinton County, Iowa.*—Pastures good.
- Marion County, Iowa.*—Very fine for the season.
- Muscatine County, Iowa.*—Pastures revived, and cattle doing well.
- Jasper County, Iowa.*—As green as in June.
- Des Moines County, Iowa.*—Never better.
- Mendocino County, Cal.*—Excellent and abundant.
- Marion County, Oreg.*—Pastures poor, no rains yet to start the fall grass.

EXTRACTS FROM CORRESPONDENCE.

TRIALS OF DEPARTMENT SEEDS.

Genesee County, N. Y.—I had three acres of the Tappahannock wheat on "Tonawanda flats," (bottom land,) which yielded 26 bushels to the acre. It was earlier, and produced better than any other variety in the neighborhood. It does best in rich, strong land.

Sullivan County, Tenn.—The gallon of Tappahannock wheat sent me from the Department last fall yielded 18 gallons of superior grain. Wherever sown it has excelled all other kinds. The Arnautka spring wheat made an entire failure, both fall and spring sown. It had an extra chance, but failed to mature any grain.

Princess Anne County, Va.—In 1869 I raised $1\frac{1}{2}$ bushel of the Schonen oats from the quart of seed sent me from the Department. Last spring I sowed one bushel, giving the eighth to a neighbor, and I have harvested 25 bushels as good as the original seed.

MIXED HUSBANDRY FOR THE SOUTH.

Newton County, Ga.—In the first part of the present year the subject of mixed husbandry was fully discussed by the agriculturists of this county, and it was generally conceded that a diversity of crops possessed many advantages over the present system—one leading and almost exclusive crop, (cotton.) We supposed a radical change would be the result of the investigation and the convictions expressed; but we find that instead of a reduction in the area devoted to cotton there was an increased acreage planted. Nothing but superabundant cotton crops and unremunerative prices will be likely to direct the energies of our farmers to mixed husbandry.

Kemper County, Miss.—Corn and cotton are the principal products of this county—the only marketable products. The people have been pushing the production of cotton to the exclusion of other crops, depending in a great measure on the West for corn and meat. It is to be hoped that, as the price of the former has fallen, our farmers will give more attention hereafter to making their supplies at home.

Prairie County, Ark.—The low price of cotton will cause considerable distress here. Many of our planters are disgusted with the so-called king.

Surrey County, Va.—All crops short. In this immediate neighborhood crops are much inferior to those of last year, and when it is remembered that last season's crops were extremely short, some idea can be formed of the meagerness of the present product. We shall have nothing to spare, and the most rigid economy will hardly carry all through to another harvest. Many are compelled to begin on the present crop too soon. It is hoped that one good result will follow these two disastrous seasons, viz., that more for home use and less for sale will be the rule another year—fewer peanuts and more corn, potatoes, peas, &c.

FREE LABOR IN NORTH CAROLINA.

Pasquotank County, N. C.—There are more evidences of recuperative energy and thrift, and of returning prosperity among our people, than have appeared at any time before since the close of the war. The former slaveholders are beginning to realize the fact, and are frank to confess it,

that farming is more profitable with hired labor than with slave labor; and all are becoming convinced that the peculiar institution kept down energy and enterprise, and was a curse rather than a blessing.

THOROUGH CULTIVATION FOR COTTON.

Marengo County, Ala.—From careful observation during the past two seasons I am convinced that thorough preparation of the soil, resulting from deep plowing and under-draining, will insure a fair crop of cotton in any season. To this add the liberal application of a good fertilizer, and early maturity will anticipate the advent of the cotton worm.

OAK TREES DYING.

Surry County, Va.—Our forest oaks of all kinds are dying at a fearful rate. If it continues another year at this rate, we shall have none but dead oaks. The result is attributed to two causes: first, the severe droughts of last year and this season; second, to the ravages of a black caterpillar, which is rapidly eating the leaves, and which seems to be as abundant as the leaves themselves.

[*Anisota (Dryocampa) Senatoria*. Hüb. Yellow-striped oak worm of Fitch. The eggs are deposited in clusters under leaves. The larvæ are social in habits, feeding together in companies, and attain their full size in August and September. They descend and bury themselves six or eight inches under ground, and remain as pupa in the earth until the last of June or the beginning of July, when the perfect moths appear, and the females lay their eggs for another generation.—T. G.]

KAUFMAN COUNTY, TEXAS.

Kaufman County, Tex.—This county has shown a wonderful adaptability for all the products that have been tried thus far, and farming yields larger profits here than any other business. The following is a fair average yield of the products named: Wheat, 20 bushels per acre; rye, 60 bushels; oats, 90 bushels; barley, 80 bushels; corn, 35 bushels; white potatoes, 150 bushels; sweet potatoes, 300 bushels; beans, 35 bushels; peas, 35 bushels; cotton, 1,400 pounds.

WINE MANUFACTURE IN SOUTH CAROLINA.

Orangeburg County, S. C.—The manufacture of wine is receiving a good deal of attention in this county. The Scuppernong grape proves to be the best for this climate and soil.

FATTENING CATTLE.

Piscataquis County, Me.—Fattening cattle are in excess of the number of last year, and in poorer condition.

Franklin County, Me.—Condition decidedly below an average, owing to reduced feed caused by drought.

Orange County, Vt.—More cattle will be fattened than usual, but not so well fattened. Much hay has been fed out before the usual time, hence winter feed is likely to be scarce.

Norfolk County, Mass.—About the same number as last year; condition better. A dry season is better for fattening than for milk.

Kent County, R. I.—The drought has caused sheep and young cattle

to be sent to the butcher, which ought to have had another year's growth.

Westchester County, N. Y.—Fewer cattle to be fattened; hay very high in price; turnips a total failure.

Ontario County, N. Y.—Cattle and sheep scarce; horses more plenty.

Hudson County, N. J.—Cattle not in as good condition as last year.

Beaver County, Pa.—Sheep scarce and cattle plenty. Where there were 100 sheep six years ago there are not 40 now. Farmers are bringing in western cattle to fatten.

Northumberland County, Pa.—Cows are selling lower than several years ago. Hogs are again becoming plenty.

Wythe County, Va.—About the same number as last year, but in better condition, as there has been plenty of grass.

Surry County, Va.—More than the usual number of cattle and sheep will be slaughtered this fall. About the usual number of hogs to kill, but there will probably be much lean pork, as there is not the corn to spare to fatten them.

Caldwell County, N. C.—Cattle in fine condition; pasturage unusually fine; a few cases of distemper, called by some dry murrain.

Carrituck County, N. C.—There is a less number of fattening cattle than last year, but an improvement in condition.

Barwell County, S. C.—Cattle are not fattened for market in this county. They are taken from the pastures and woodlands to the butcher, and are in fine condition for beef until late in the fall and in the winter, when the grass begins to dry out, when those intended for beef are turned into the corn fields, where they get the gleanings and late grass.

Morgan County, Ala.—Pastures first rate, and beeves very fat.

Manatee County, Fla.—Cattle in fine condition in the range. The shipments from this county have been large this year, hence the stock is reduced.

Collin County, Tex.—Fine corn crop, and there will probably be 1,500 to 2,000 head of beef cattle corn-fed for southern markets. The number of beef cattle is annually decreasing in northern Texas, in consequence of the large number driven to Kansas.

Titus County, Tex.—Cattle in fine condition. They are fattened on the prairies and in the woods.

Milam County, Tex.—Stock cattle improving and increasing in numbers. Horses improving in breed and increasing in numbers. Hogs decreased 10 per cent. Failure of the mass. Sheep doing well. Large numbers of the above stock in the county.

Kaufman County, Tex.—Cattle usually keep fat all winter. Feeders begin to corn their stock about the middle of November, continuing until February, when the cattle are ready for market.

Braxton County, W. Va.—In good condition.

Kanawha County, W. Va.—Beef cattle scarce, being thinned out to supply laborers on railroads.

Monroe County, W. Va.—Cattle annually increasing in numbers. Fattened well, and are now being driven to the feeders of Pennsylvania and to Baltimore and other markets.

La Salle County, Ill.—More being fed than usual.

Lee County, Ill.—All that can be investing money in fattening cattle. Farmers seem to have a cattle mania.

Pike County, Ill.—Scarce, and prices high.

Warren County, Ind.—There is a great increase of fattening cattle, owing to increased numbers brought from Texas. They are of better

quality than those first introduced, and under better regulations there is no Spanish fever.

Lake County, Ohio.—An unusual number being grazed. Condition very fine.

Butler County, Kans.—Preparations are being made to winter about 20,000 head of Texas cattle in this county, at \$4 per head.

Gallatin County, Mont.—Our cattle are, as usual at this season of the year, highly fattened upon the native grasses. Our stock has been augmented by several thousand head imported from Texas, the Cherokee lands, and Utah.

DISEASES OF STOCK.

York County, Pa.—The hog cholera is killing off many hogs in the southern part of the county.

Elk County, Pa.—Many fine large pigs have died the past month. They drop off suddenly.

Montgomery County, Md.—The disease of hogs mentioned in last month's report continues unabated. One farmer has but three left out of sixty, and those not lost are unthrifty.

Campbell County, Tenn.—Hogs dying of cholera in large numbers in some neighborhoods.

Sullivan County, Tenn.—Hog cholera prevailing to an alarming extent.

Greene County, Ill.—Four herd of Texas cattle have been brought into the county this year against the statute, and the persons importing them were indicted at the September term of court. The Texas fever has made its appearance. One farmer has lost about twenty head, most of them suddenly. About the first of September bloody urine was an apparent symptom.

Lincoln County, Ky.—Some hog cholera, but not severe.

Boyle County, Ky.—Hog cholera becoming prevalent, and confined mostly to pigs and sows. About two-thirds of those attacked are usually lost.

Spencer County, Ky.—Hog cholera more or less prevalent in three-fourths of the county.

Clinton County, Ky.—Cholera in some parts of the county, but about twice the usual number of hogs are being fattened for market.

Owsley County, Ky.—A great many hogs dying of cholera. Some farmers have lost all they had.

Des Moines County, Iowa.—Hog cholera prevailing extensively.

ADDRESS AT THE ILLINOIS STATE FAIR.

The following address was delivered by the Commissioner of Agriculture at the fair of the Illinois State Agricultural Society, at Decatur, on the 28th of September last :

FARMERS OF ILLINOIS: It gives me unalloyed pleasure to greet, at this annual festival, the associates of former years of rural labor and experiment, generous rivals in my stock-breeding efforts, and intelligent cultivators of as rich a soil, as a State, as this or any other nation can truthfully boast. Worthy of such a soil are its noble occupants, the young, the vigorous, the spirited and intellectual, drawn from the seaboard States, and from countries beyond the sea, by the magnetism of these broad and beautiful prairies. Year by year their taste and skill and industry are giving new touches of beauty to a landscape that was ever beautiful, uniting utility with grace, and presenting a scene instinct with life, unexampled growth, and tireless activity.

This is indeed a country of surprises and anomalies to the emigrant. With no woodman's tedious labor, no mingling and manipulation of incongruous strata of intractable soils, no amelioration with fertilizers, a fair, fertile area, a farm ready made, lies invitingly before him. He has only to break the soil, deposit the seed of maize in the congenial earth, which forthwith prepares to laugh with a generous harvest, without even the premonitory tickling with the hoe; and, strange enough, as culture advances, and crops and herds increase, in this inverted order of things, little belts of forest spring up, groves dot the varied landscape, the monotony of which is broken by a display of the lovely lines of forest scenery.

The evidence so profusely presented all around in every section of this exhibition, in the magnificent array of farm stock, the wonderful abundance and variety of the fruits of the soil, and the marvelous ingenuity and skill in the farm implements adapted to almost every want of agriculture, attest the energy and zeal with which you press forward in the race of agricultural improvement, and constitute an earnest for, and a guarantee of, greater triumphs in the future.

In a region less favored by nature, or one in which the soil is exhausted by constant cropping in some special and exhaustive culture, it is a labor most hereculean to attain the highest fertility and the greatest productiveness and profit of farming. Here you have a virgin soil, or if deteriorated in places by unskilled husbandry, still not beyond the reach of speedy recuperation at small expense of money and effort. This is an advantage of priceless value; improve it; arrest the first steps of deterioration. In this connection you will pardon a few suggestions which have long borne with the weight of conviction upon my mind.

THE WHEAT SPECIALTY.

In the central portion of the West, I have no hesitation in declaring that wheat-growing as a specialty should cease. It may be tolerated by the pioneer farmer, without capital, who adopts it as an inevitable necessity of his poverty, and as an expedient for exchanging a part of the intrinsic value of his farm for houses and implements, for horses and cattle, for fences and for other improvements. The danger is, that having converted half his fixed investment into working capital, he may by force of habit continue to reduce its productive value, until his improvements are worn out, his surplus wasted, his fields barren, and the strength of his manhood gone, leaving him only the infirmities of age with which to renew the battle of life upon other and untrodden fields; or if he enriches himself while despoiling the land of its fatness, he entails hard labor and comparative poverty upon his successor. It is a practice unworthy of this age of progress, and of the wonderful capabilities of the soil which it impoverishes; it is one that engenders weeds, deteriorates seed, discourages system, and repudiates science. The vandals of cultivation should be kept on the outskirts of the domain of agriculture.

Exporters of breadstuffs and political enthusiasts, who neither know nor care for the interests of the farmers, sometimes prate of the great value of cereal exportations. It is, and ever must be, if persisted in as a settled policy, and relied upon as a permanent source of prosperity, an unmitigated curse rather than a blessing. It disturbs the equilibrium of production, despoils the soil of its fertility, fattens a horde of go-betweens, and often gives the larger portion of the crop for the transportation of the remnant. No man in his senses, or unblinded by the glare of gold, can fail to see the wastefulness of the exportation to another continent of so bulky a product as wheat or flour. If, as is asserted, the price of the quantity consumed at home is fixed by the price of that which is sold abroad, the comparatively large exportation of last year might as well have been burned with the straw, so far as the grower was concerned, for the reduction in the home consumption far exceeded the value of the exports at the seaboard.

Very few, indeed, realize the comparative paucity of our exports of wheat and flour. In forty-three years, up to the close of the fiscal year 1868, the wheat exported was less than the quantity produced in the United States in 1869, and the wheat and flour together would aggregate little more than the crops of the past two years, namely, 236,942,887 bushels of wheat, or with flour included as wheat, 670,900,182 bushels.

Another consideration is found in this fact—but one nationality, Great Britain and its dependencies, requires it; the purchases of all other nations are usually a mere bagatelle—not worth consideration. Thus we depend practically upon supplying the necessities of but one single people, and have in competition with us all the wheat-exporting nations of the earth; and the extent of those necessities varies with every change of season, and our share in the supply fluctuates with every caprice of trade.

A nation that lives by exporting wheat five thousand miles by land and sea must have a short existence. It is a folly which the practical sense of our farmers will never practice extensively, the vestiges of which will vanish gradually as population increases and advances westward. Let our agricultural exports increase in meat and cheese and wool, and in a hundred extended and valuable products of agriculture, not in wheat.

TRANSPORTATION A BURDEN.

The burden of transportation is one that must ever bear heavily upon the farmers. Should ship canals, of sufficient size for the use of steam power, ever be opened to the sea-coast, or should a double-track freight railway, on which continuous trains could be run at lowest possible freights, ever be constructed, either by the United States or by a company under a charter drawn in the interest of the people, a burden of monopoly and excessive charges might be removed, but the expense would still be unendurable in the transportation of certain heavy products; the necessity would still exist for converting grass into butter and cheese, corn into beef and pork and high-wines, roots and hay into mutton and wool. (and, better still, into woollens and worsted,) and the elements of earth and air, through the alchemy of labor, into new and desirable forms of production required by the increasing wants of advancing civilization, of high value in proportion to bulk or weight, and of small expense for transportation in proportion to value.

The time has come when the farmers, in the exercise of their political prerogative, and in the strength of imperious numbers, should combine to protect themselves against the usurpations of railroad monopoly, and to thwart the schemes of gamblers in railroad stocks, who, with equal unscrupulousness, "water stock," and despoil the honest stockholder, and fleece the public with high fares and excessive freights. If farmers have no power to protect themselves, then they are indeed at the mercy of a set of reckless gainsters.

MEAT PRODUCTION AND FARM ANIMALS.

It is not alone the fact that it costs ten times as much for the transportation of a dollar's worth of cereals as for the same value in animal products, that I recommend more attention to the live stock of the farm. That is a question of markets and present profits. It is also a question of fertility, of a systematic and rational agriculture, and the future value and permanent productiveness of the farm. I have the satisfaction of knowing that the true philosophy underlying this question is well understood by many farmers in Illinois, and, as a consequence, that some sections of your fertile area is yearly increasing in productive value through the restorative agency of stock farming. The high rentals in England are obtained by the restorative effect of green cropping and meat production: the feeding of the refuse of beets in France and Germany, on the beet-sugar farms, results in more beef and mutton, and more wheat, in addition to the sugar, than were secured under the old system. So it will be in Illinois with any system that shall enable its farmers to carry increased numbers of farm stock; with the increase of cattle there will come, in due course of crop rotations, increase of cereals, vegetables, and fruits required for the use of man.

It is gratifying to learn that the farmers of Wisconsin, Minnesota, and other wheat-growing States, are feeling an increasing interest in farm stock, and enlarging the numbers of their herds. They are learning wisdom by the sad experience of last year's prices.

In view of the despondency so prevalent of late among wool-growers, allow me to call your attention to accounts of profit and loss received from our correspondents, which show conclusively, that while some by their own exhibit have lost money in keeping sheep, others have realized a profit that should satisfy any reasonable expectation, and it clearly appears that these losses have been the direct result of that despondency, leading to neglect and carelessness, and that the profits have come naturally from increased attention, judicious adaptation to changing circumstances, and a moderate exhibition of pluck and persistence. Sheep left to the mercy of scab and foot-rot, or exposed to the severity of winter storms, or the risk of starvation in seeking subsistence under the snow, or at the base of the straw stack, should not be expected to secure a satisfactory balance sheet at the reckoning day. There is a scarcity, notwithstanding our assumed surplus of sheep, of juicy, fat, and savory mutton. Its production is everywhere a concomitant of good farming, and as lands advance in price, and the tastes and purses of consumers favor the change, good fat mutton and heavy spring lambs will be produced abundantly and profitably upon the prairies of the West. But should a farmer make the mistake of keeping a flock of mutton sheep year after year for their wool alone, it should surprise no one to hear the complaint that mutton sheep are not profitable. There is abundant room in this country both for the long and the short wools, and I hope never to see the time when their numbers shall be less than at present.

The raising of swine, a remunerative branch of industry in connection with corn-growing and cattle-feeding, demands the attention of farmers toward a mode of rearing and feeding which shall mitigate the losses from disease, which are in some places so severe as almost to exterminate the porcine race. Could these cases be obviated, a percentage of profit which few industrial callings could equal would be added to the gains of pork production. I have noticed that the disease known as "hog cholera"

appears mostly in connection with feeding in large numbers with a single variety of food. The hog is omnivorous, and does not long continue to thrive on corn alone, or on distillery slops, but requires variety and bulk as well as nutriment. While cure in hog cholera is an almost hopeless task, prevention is easy.

I am glad to see by evidence all around me that the horse, the noblest of all farm animals, is not neglected in this State. The opportunity for the exercise of taste, skill, and science, afforded in the breeding of horses, is worthy of high ambition, and no man is fit to train a horse who cannot control his own spirit, and exhibit the virtues of patience, gentleness, and firmness.

NEW INDUSTRIES.

He is a benefactor who will introduce among you a new plant from which food may be obtained, or discover a method of utilizing one already known, who will establish a factory for using a waste product of agriculture, or simplify or economize a process already employed. There are those in the Eastern States who prosper in the collection of marine algae, the *Chondrus crispus*, or Irish moss, for edible and fining purposes, and various sea-weeds for fertilizers; who pulverize the leaves and tender twigs of the hardhack of the pastures for the tannin they contain, and who amass fortunes by the freezing of fat turkeys in winter to sell in a frozen state in summer, like congealed blocks, from the recesses of an ice-house. The industrious poor of the South find a profitable business in the collection of sumac; the people of Southern Florida are coin-ing thousands from garden patches in the culture of bananas and pine apples; and other products, as oranges, lemons, limes, and figs, fiber from ramie, paper stuff from cane, and oil from the *Ricinus*, are engaging special attention.

It is often a minor industry which yields superior profits to those engaged in it. There are sources of wealth in the rich flora of the West which are now neglected or spurned, and waste products which might be utilized to great advantage. The flax fiber, which you formerly cast aside as worthless, is already used extensively in the manufacture of tow bagging for enveloping cotton bales, and enough is probably wasted to supply the southern market with this substitute for jute bagging. A grass (the *Spartina*, or cord grass) grows in this State in the rankest luxuriance, on the swampy bottoms on the Mississippi, which makes an excellent paper, and a profit is already made in its manufacture.

Let the long list, of which these are but random samples, be extended, and new rewards be offered to labor, new premiums for industry and ingenuity, by your societies, leading to the development of new industries, some of which may be small and others amount to millions in their full development. There is work for all; and with this wide variety will come new outgrowths and applications, involving more labor and new creations of wealth.

I have aimed to make the Department of Agriculture a medium of these new developments, and have shown to Congress that we have been importing a hundred millions annually which we have good reason to believe may be produced at home, with benefit to our monetary exchanges, and with still greater advantage in diversifying production, in furnishing profitable labor to the swarms of willing laborers yearly approaching our shores, and in adding to the personal comfort and prosperity of all laboring classes. These products consist of fruits, grains, and other edibles, textiles, gums, sugars, dyes, and medicines. Of the latter, *Cinchona*, yielding the quinine of pharmacy, has already been propagated with success, in the expectation of being able to establish a cinchona plantation among the mountains of the South or in Southern California, in imitation of the successful experiment of the British government in India.

SUGAR.

A few industries may be profitably extended, and the time now seems ripe for such extension. Sugar is a product required in annually increasing quantity, for the production of which favorable soils and circumstances combine; and American enterprise, in the spirit of a true national economy, must eventually supply the demand from native resources of soil and labor. More than a half million of tons, costing \$70,000,000 in gold, is now required per annum; and of this but one-tenth is produced upon our soil. With sirups, \$100,000,000 will scarcely pay the first cost of a year's consumption of sweets, and, including transportation and dealers' profits, \$125,000,000 will not suffice to settle the bill. Europe, with no opportunity to produce sugar from cane, has in the last half century supplied her teeming millions from the juices of the beet, and from this source alone has made a contribution of one-fourth to the total aggregate of the sugar production of the world. We have the power, in the next quarter of a century, of satisfying the home demand for saccharine products, either from the cane or the beet alone, but with both we can scarcely fail of attaining a result so essential to the national weal. The experiment at Chatsworth, so unfortunate in many respects, will assure the success of others through its own failure, and through a better adaptation

of means to ends; and by the aid of improved processes for defeating the raw juice, now in very successful operation in Europe, Chatsworth may ultimately redeem its failure, and establish a decided success. Two beet-sugar establishments go into operation during the present autumn in California, where the promise of rich returns is cheering; and the experiment has been successfully demonstrated in the high latitude of Northern Wisconsin.

Little time will elapse ere the sugar consumption will be equivalent to \$200,000,000 per annum; and it is my belief that the West will then produce no small share of the required quantity upon her own soil. It will then be recognized as a leading interest in agriculture, as it is now upon the continent of Europe; and cattle-feeding will then thrive as it never has before, and wheat and other products, as part of a judicious rotation, will attest the increasing fertility of our prairie soils, and attend the development of a better system of scientific agriculture.

The most prosperous and productive agricultural sections of Europe derive their greatest advantages from beet sugar. If we do not profit by their example, the reason will be found in the greater results obtained in the culture of the cane. Let us solve this problem of abundant sugar production speedily, and save to the nation the millions needlessly spent abroad.

SILK PRODUCTION.

It is not strange, in the beginning of our career of industrial development, that the little silk-worm has been neglected as a source of employment and wealth, and the national appreciation of *Bombyx mori* may have been modified by a remembrance of the *Morus mulicaulis*. It would be creditable and profitable to us, as a nation, could we outgrow the tendency to *mania* in the initiation of a new rural pursuit, and thus avoid its disastrous abandonment and deep-seated prejudice, which long prevent its successful introduction. The signs of the present time indicate, for the rearing of silk-worms, an assured success, and a permanency of decided promise. As labor multiplies, an interest like this, capable of almost indefinite extension in manufacture, acquires vastly increased importance. Already four of the seven branches of silk production can compete with foreign nations, viz: "Throwing" of the silk or preparation of the threads, the dyeing of silk, the regeneration and spinning of silk waste, and the automatic weaving of plain stuffs. In silk-weaving England now employs 200,000 persons, and the utilization of *silk waste* in France requires 30,000 workmen, and realizes \$20,000,000. We believe we can yet compete with outsiders in rearing the worms, reeling the cocoons, and weaving figured goods. California already produces millions of cocoons, in a climate in which the worms are thus far as healthy as any in the world; and the Eastern and Southern States are beginning to embark in the business. The sale of eggs for exportation at \$4 to \$10 per ounce, has been temptingly remunerative since the prevalence of the silk-worm disease in Europe, which inflicts an annual loss upon France alone, according to M. Thiers in a speech in the Corps Legislatif, of \$20,000,000 annually. In eighty years, the annual value of the silk manufacture of France has advanced from \$5,000,000 to \$150,000,000.

Who will venture to estimate the value of silk goods in the United States thirty years hence, manufactured from American cocoons? Thousands of individuals (in suitable climates) incapacitated for the severe labors of agriculture, can compete successfully for the supply of the raw material.

It may be an interesting fact to the dwellers in these prairies, begirt with osage orange hedges, that the naturalist of the Department of Agriculture has readily obtained cocoons of beautiful silk, from worms fed exclusively upon the *Maclura aurantiaca*; this experiment has been confirmed by a late communication received at the Department, from a reliable correspondent, who states that he has, the past season, fed upwards of ten thousand worms, with perfect success, upon the osage orange alone.

SOIL IMPROVEMENT.

Your soil is wonderfully fertile. You may be disposed to consider it inexhaustible. It is an injurious, if not a fatal error. The coffers of the most opulent treasury, constantly drawn upon, will eventually become empty. Statistics of production attest that repeated crops of wheat, on your best lands, show rapid deterioration; every crop taken from the soil, with no return, reduces the capacity of the farm for production in arithmetical ratio, and its capacity for profit in geometrical ratio. Such a course may give you for a time a little more "ready money," but you are certainly robbing your heirs; it is extremely easy to deplete your best soils; it is doubly difficult to renovate them; how difficult, you can only realize after trial. I have had a full experience of this in Maryland, having brought the value of a thousand acres, after years of labor and toil, from \$10 up to \$60 per acre and repaid its cost. The difference between its original and improved yield in that period, which represents the measure of loss wrought by former mismanagement, would have been a fortune in itself. I can point out farms in Maryland, thirty years ago reduced to barrenness and the meager value

of \$2 per acre, through repeated cropping with corn and tobacco, which are now richly worth \$80, through the influence of clover, fertilizers, regular rotations, and judicious management generally. Then they could only yield a miserable support to their proprietors; now they maintain their owners in comfort and even luxury. It has been estimated that 100,000,000 of acres of these worn-out lands have been thrown out of cultivation in the South. Beware of a similar experience in the West; you are on the road to the same ruin, which can only be averted by a prompt use of restorative agencies, and the exercise of an enlightened judgment in all the operations of your agriculture.

STEAM PLOWING.

Among the improvements of the future, inevitable in successful accomplishment and beneficent in its results, I deliberately place that of steam culture. Its success is already assured in Europe. Five sets of steam machinery are now in active and profitable operation in this country—three upon sugar plantations in Louisiana, and two on a cotton plantation in Mississippi. A set run by two 20 horse-power engines, cultivating to the depth of twenty inches, last year produced a hogshhead of sugar more per acre than horse-power culture by its side.

We shall make changes in this English machinery—we may perfect a thoroughly American machine (though it should not be forgotten that the Fowler method is based upon an American invention) before the use of steam in culture becomes general upon our farms; but that result is sure to come, and I see no reason why it should not soon be reached. It is folly to assume that the noble art of agriculture is to derive no benefit from steam, or that commerce and manufactures must exclusively appropriate an invention which has already wrought a revolution in the industries of the earth.

THE DEPARTMENT OF AGRICULTURE.

In all these progressive movements, briefly hinted at in these remarks, it is the office of the Department of Agriculture to co-operate. Its functions are various, and means of accomplishment extensive. Its divisions embrace statistics, agricultural chemistry, natural history, botany, and practical horticulture. The statistical division is the office of publication, from which are issued the annual report, (275,000 copies of the last issue,) the monthly report upon subjects of special investigation, and statements called for by Congress, and the organization of agriculture. It utilizes the correspondence of the Department, special and regular, pursues original investigations through the aid of practical experiments and trained experts, employs consular facilities in obtaining the facts of foreign agriculture, and appropriates whatever is valuable in the records of domestic and foreign societies.

A well-appointed chemical laboratory has been established and is in active operation, and whatever light chemistry may be expected to shed on agriculture is hoped for from this and other similar efforts to keep the science and the practice of agriculture on an even line. In the experiments with sugar beets it has already participated, and will continue to aid in the endeavor to make of their manufacture a great industry. It has been my desire to have an extensive series of analyses of the cereals from the different soils and varied climates of this extensive country, and to that end I would here ask further contributions of best samples, from different sections of the State, which may illustrate the effect of altitude and meteorologic influences upon the growth of these plants. These may be sent free to the Department. Agricultural and economic geology and mineralogy, being intimately allied with agriculture, are also represented in a collection made in the chemical division.

The division of entomology is one of great practical importance. The loss to the cotton crop by insects is assumed to have been forty millions of dollars in a single year, and the total annual loss to farm crops has been placed by good authority at three hundred millions per annum. Under the direction of the entomologist is a museum of natural history, and an economic collection of the products of agricultural industry in all the processes of their manufacture, including textiles, dyes, sugars, alimentary substances, and medicines.

To the experimental garden is now added an arboretum, including 1,500 varieties of trees and shrubs, affording an opportunity to the student in forestry and arboriculture which cannot elsewhere be found in the country. Greatly needed plant-houses of an aggregate length of 470 feet are now in process of erection, for the propagation of new varieties of semi-tropical fruits for the South, new textile plants, and many others useful in the arts for acclimation.

The system so successfully inaugurated for exchanges of books and documents of scientific and industrial societies, and also exchanges of seeds and plants, has been extended to all parts of the world, and promises increasingly valuable results. It has already proved highly useful in our system of acclimation and dissemination of new and useful plants.

I am prepared to maintain, and satisfactorily to show, that our seed distribution of

the last three years has already added millions to the value of our production. The success of the Excelsior oats has been remarkable, uniformly increasing and generally doubling the yield, and the White Schönen oats have, in some instances, yielded at the rate of 104 bushels per acre. The Tappahannock, White Touzelle, and Arnautka varieties of wheat have given general satisfaction, yielding highly remunerative results to the first cultivators, and vastly greater advantages in the aggregate to those who have continued the cultivation. I greatly regret the inability of the Department, from the recent meager appropriations, to extend more widely and rapidly the benefits of this distribution.

Such are our aims and facilities for accomplishment. To attain the best results the active co-operation of all intelligent and progressive farmers, and all organized agencies for rural improvement, is an absolute necessity. In closing, permit me to ask this timely aid and willing association in efforts to elevate the character and increase the profits and influence of American agriculture.

VARIETY IN SOUTHERN PRODUCTIONS.

The necessity of resorting to a more diversified system of industry in the South has been often urged in these reports, and by planters of intelligence and foresight, and at last public attention has been directed to hitherto neglected products. Foremost among those who have been active in investigating the indigenous resources of that section is Dr. F. P. Porcher, of South Carolina, who made a report at a late meeting of the Emigration and Agricultural Association of that State, on the extraordinarily rich flora of the various climates found within the belt of States extending from Maryland to Florida and from Tennessee to Texas, with elevations varying from the sea-level to an altitude of 6,000 feet, with every variety of soil and surface, including elevated plateaus, mountain slopes, rich uplands, inexhaustible alluvion, and the fertile siliceous soils of the Sea Islands, all contributing to produce a wonderful variety and exuberance of vegetation. Of the plants included in this list, some single article, now neglected, may become a great staple; or an improved process in the arts, applied to some of these products, may give rise to a new industry, as was the case with indigo, rice, and cotton, the beet in France, and the silks of Italy. The plants are thus classified:

NEW AGRICULTURAL PRODUCTS.

Substitutes for cotton: Ramie or China grass, (*Boehmeria tenacissima*;) aloe, eelgrass, (*Zostera marina*,) reed mace, (*Typha latifolia*.)

Plants yielding fibers: Ramie, esparto grass, sisal hemp, (*Agave Sisalina*,) bear grass, (*Yucca filamentosa*,) jute, (which the Department of Agriculture is now introducing from the East Indies;) Hemp, aloa or Indian aloe fiber, common in Florida; or the leaves even of the plantain, banana, or aloe; flax, white rush, (*Spartina juncea*,) fiber from the bark of the cotton bush, as well as from the palmetto, (*Chamerops palmetto*.)

Plants yielding paper stock and fiber: Agave, (*Agave Sisalina* and *A. virginica*,) aloe cane, (*Arundinaria gigantea* and *A. macrosperma*,) Chinese sugar-cane, cat-tail, (*Typha latifolia*,) Indian corn, esparto grass, the pulp of poplar, camelina or false flax, (*Camelina sativa*,) sun-flower, okra, palmetto.

Plants yielding sugars and saccharine substances: Chinese sugar-cane, sorgho sucre, black imphee, Indian corn, cut thickly and cut before ripening; sugar beet to be planted at the South.

Luxuries: Chinese tea plant, (*Thea viridis*,) European olive, tobacco, several varieties; chicory, (*eichorium intybus*,) silk. Some new breeds of silk-worms feed on the leaves of the ailanthus, the oak, and even the castor-oil plant.

Fruits : Apples, pears, and peaches planted in pine lands, and protected by natural pine forests. The fruits should be canned, as at the North.

Berries : Dried for export, for canning, for preserves, and for liquors; this business is already commencing in North Carolina. Strawberries, blackberries, raspberries, and cherries, as well as vegetables on truck patches, can be profitably raised as market crops near cities, and all can be profitably canned as a regular business.

Liquor : Distilled from corn, rye; from fruits, as apples, peaches, and cherries; also wine from grapes, particularly the Scuppernong, which is indigenous in the South, and very productive; it bears early, and is said not to be injured by insects or rot; it makes an effervescing or foaming wine, and, with proper treatment, a rich and delicious still wine. The thermal belt along the mountains, in the northern parts of the Carolinas, is considered particularly well adapted to grape culture.

Ales and beer : From native materials; should be fermented in properly constructed, deep, underground cellars; such cellars are equally essential at the South to all wine-makers.

Plants yielding edible farina, starch, &c. : Arrow-root, Bermuda and Florida; potatoes, Irish and red yam; rice, Indian corn, Jerusalem artichoke.

Plants yielding oils : Medicinal, dietetic, and for lubricating and burning purposes; flax, olive, castor bean, gold of pleasure, ground-nut, bene, sunflower, cotton seed, Chinese tallow tree, (*Stillingia Sebifera*.) This latter plant is naturalized, and grows abundantly near Charleston, South Carolina. Its seeds are rich in oil, and yield also stearine and elaine.

Plants yielding forage : Ramie, common clover, mesquit, and other southern grasses; Japan clover, (*Lespedeza striata*,) a new forage plant of great promise; Indian corn, Jerusalem artichoke, and even spurrey and couch grass, may answer for winter pasturage, as they grow on very poor, sandy, and worn-out soils; but are not favorites with northern farmers.

Wood for house-building, furniture, utensils, &c. : Oaks, hickory, walnut, cypress, poplar, pine, pride of India, &c.; trade in boards, staves, and hoops.

Ware for baskets : Osier willow, (*Salix Forbeyana*,) Carolina willow, (*S. nigra*;) spartina, &c.

For hats, caps, mats, &c. : Palmetto leaves, saw palmetto, wheat and rye straw, wire grass for mattings and curtains, fescue grass, reed mace, (*Typha latifolia*.)

Material for beds : Carolina long moss, boiled, rotted, and dried, can be made a profitable business; cotton fiber, saw palmetto, cat-tail or reed mace, beech leaves.

Material for brooms : Guinea corn, (*Sorghum vulgare*,) Doura corn.

For packing fruit, merchandise, &c. : Delicate leaves of ferns.

For ship timber : The various woods: Live oak, locust, pine, hickory, &c.

Plants to be cultivated as food for animals : Mulberry, (Herbemont's, and the White Everbearing, yield immense quantities of fruit;) seeds of sunflower, tubers of Jerusalem artichoke.

Charcoal, lamp-black, and turpentine : From the pine.

Saw-dust is a chief source of oxalic acid; formic acid and wood spirit are prepared from it as a waste product, and are useful in many of the arts, and in the calico and other manufactures.

PLANTS YIELDING PROFITABLE MEDICINAL AND ECONOMICAL AGENTS.

Opium poppy (*Papaver somniferum*) and common garden poppy. Opium is obtained by making slight incisions in the unripe capsules a few days after the fall of the flower; a white substance exudes, and forms in tears on the edges of the cuts, which, after standing twenty-four hours, is scraped off in brownish lumps. Castor oil, from the castor bean, is used as a medicinal agent, as a lubricator, and the seeds as a manure; yields 15 to 25 bushels per acre; the seeds yield about one-fourth of their weight in oil.

Alkaloids and resinoids: These command ready sale at the North; podophylline, from the wild jalap of the South; hydrastine, from hydrastis; iridin, from the blue flag; leptandrin, from leptandra—all natives of the South.

Pearl and other ashes, lye, and soap: From myrtle and other berries; oak and other woods.

Acids: Hydrocyanic, acetic, and pyroligneous, from distillation of pine; citric from limes and lemons; and oxalic, used in dyeing, from sawdust, and from sorrel and dock.

Tinctures from native plants.

Medicinal leaves and flowers: To be cultivated for sale as aromatics; sage, hoarhound, hops, peppermint.

Medicinals, oils, and essences: From sassafras, lemons, several species of wild sorrel, bene, and jessamine flowers.

Seeds, oils, and wax: From flax, mustard, and myrtleberry.

Potash, soda, niter, barilla, and kelp: From the saw palmetto, the ashes of which are exceedingly rich in potash; fumitory, wormseed, saltwort, (*Salsola kali*,) barilla, glasswort, (*Salicornia herbacea*;) (the last three grow on the coast;) corn, potatoes, and pea vines.

Iodine and kelp: From fuci and other sea-weeds.

Ammonia: From fumitory, wormseed, pea vines, and marsh mallows. These are all native plants, and are rich in potash, and can be turned under the soil as manure.

Balsam: From the balsam fir of the mountains.

Essences and perfumes: From roses, jessamine, and other flowers.

Salt of sorrel and binoxalate of potash: From dock, sorrel, &c.

Medicinal plants: Wild jalap, (*Podophyllum peltatum*,) ginseng, Carolina pink, Seneca and Virginia snake roots, blood root, &c.

Materials for tanning leather; also for dyestuffs and calico printing: From black, white, and red chestnut, Spanish and other oaks; from hemlock forests; from the leaves, seed vessels, barks and roots of various plants growing abundantly at the South.

Inks: From the tannin yielded from the unripe persimmon, and by barks, leaves, or fruit of the gum tree, oak, alder, walnut, &c.

Dyestuffs and materials: Blue, yellow, green, and black, from the walnut, agrimony, persimmon, maple, sweet leaf, vitis, indigo, &c., all native plants.

Quercitron: From the black oak, (*Quercus tinctoria*,) which abounds in the upper districts of the State.

Bee pastures: Honey and wax as articles of trade.

Beet-root sugar: From the beet.

Hedges, in place of fencing: From the osage orange, cassina, haw, &c.

Madder, to be cultivated.

Railroad ties: From planting locusts along the lines of railroads.

CLIMATE OF SOUTHWESTERN ARKANSAS.

The following tables of spring and autumn frosts, and of rain-fall, at Washington, Arkansas, in latitude $33^{\circ} 42'$ north, have been compiled by Mr. J. R. Eakin, of that place, from the notes of the late Dr. N. D. Smith. The first table shows the periods of latest spring and earliest autumn frosts, from 1840 to 1867. Mr. Eakin remarks that his chief purpose is to represent the commencement, length, and close of the growing season of tender plants; the season for hardy plants being much longer. Frosts destructive to such hardier vegetation often do not occur after the middle of February, and forest trees usually remain green until late in November. In some seasons there has been no frost, although the weather has been destructive to tender plants at certain times in the spring. In such cases 32° of the thermometer, or a lower temperature, has been taken as equivalent to frost:

| Year. | Latest spring frost. | Earliest autumn frost. | Length of growing season. | Year. | Latest spring frost. | Earliest autumn frost. | Length of growing season. |
|--------|----------------------|------------------------|---------------------------|--------|----------------------|------------------------|---------------------------|
| | | | <i>Days.</i> | | | | <i>Days.</i> |
| 1840.. | March 30..... | October 3..... | 187 | 1854.. | March 11..... | November 13... | 247 |
| 1841.. | March 23..... | October 23..... | 214 | 1855.. | March 31..... | October 24..... | 207 |
| 1842.. | March 15..... | October 25..... | 224 | 1856.. | March 14..... | October 16..... | 216 |
| 1843.. | April 1..... | October 31..... | 213 | 1857.. | April 19..... | November 9..... | 204 |
| 1844.. | March 31..... | October 19..... | 202 | 1858.. | March 9..... | November 8..... | 244 |
| 1845.. | April 7..... | October 12..... | 188 | 1859.. | April 17..... | October 28..... | 194 |
| 1846.. | April 13..... | October 18..... | 188 | 1860.. | March 23..... | October 14..... | 200 |
| 1847.. | March 27..... | October 25..... | 212 | 1861.. | March 21..... | October 23..... | 216 |
| 1848.. | April 1..... | November 1..... | 214 | 1862.. | March 24..... | October 26..... | 216 |
| 1849.. | April 16..... | November 27..... | 225 | 1863.. | March 4..... | October 24..... | 234 |
| 1850.. | March 29..... | October 26..... | 211 | 1864.. | March 22..... | November 21..... | 244 |
| 1851.. | March 8..... | November 6..... | 243 | 1865.. | March 11..... | November 3..... | 237 |
| 1852.. | March 20..... | November 12..... | 237 | 1866.. | April 8..... | November 15..... | 221 |
| 1853.. | March 4..... | November 14..... | 255 | 1867.. | April 6..... | ..... | ..... |

The rain-fall, in inches, for the different months of the year, as calculated from observations continued during twenty years, is as follows:

| Month. | Maximum inches. | Minimum inches. | Average inches. | Month. | Maximum inches. | Minimum inches. | Average inches. |
|---------------|-----------------|-----------------|-----------------|----------------|-----------------|-----------------|-----------------|
| January..... | 10.9 | 1.1 | 4.58 | July..... | 19.5 | 1.2 | 4.94 |
| February..... | 14.5 | 0.4 | 4.97 | August..... | 15.9 | 0.7 | 3.97 |
| March..... | 9.6 | 1.4 | 5.33 | September..... | 8.3 | 0.6 | 3.48 |
| April..... | 13.6 | 2.6 | 5.47 | October..... | 9.4 | 0.8 | 3.93 |
| May..... | 16.0 | 1.0 | 4.83 | November..... | 11.3 | 1.2 | 4.73 |
| June..... | 8.9 | 0.9 | 4.02 | December..... | 9.8 | 1.6 | 4.45 |

In this period of twenty years, taking the average of the same date each year, only two days, January 18, 19, show a mean temperature below 40° , and only nine days a mean temperature above 80° , viz: July 8, 14, 15, 16, 17, 25, 28, 29, and August 17. These long-continued observations show that the coldest weather generally occurs about a month after the winter solstice, and the warmest weather about a month after the summer solstice.

OSAGE ORANGE AS FEED FOR SILK-WORMS.

As Mr. Riley, in the American Entomologist of September, appears to doubt the statement of one of our correspondents in regard to his success in raising the silk-worm (*Bombyx mori*) on the leaves of the Osage orange, (*Maclura aurantiaca*,) (see Monthly Report of the Department for May and June,) for the reason that the name of the correspondent was omitted, we give another letter received lately from the same source, with name and residence appended, reiterating the statement and giving a more detailed account of his experience.

G.

SPANISH FORK CITY, *Utah County, Utah Territory, September 15, 1870.*

DEAR SIR: I take great pleasure in replying to your favor of the 2d instant. I wish to state that my previous communication to you, an extract from which was published in the Monthly Report of the Department, is strictly true. Since I commenced feeding the *Bombyx mori* on osage orange, the fact has become so familiar to myself and neighbors that I did not suppose it would be doubted. If any additional testimony is necessary to confirm my statement, I can give the names of as many responsible persons, *under seal*, as may be required, as the facts are quite familiar to all the inhabitants of this town, and the greater part of the county.

This season I have fed upwards of ten thousand worms on osage orange, and they have all spun—the box of cocoons I sent you being an average sample of the crop. This is the third season I have fed and propagated the same worms entirely on osage orange, and they show no signs of deterioration; on the contrary, it was remarked by many this season who had seen them during the past three years, that they looked larger and better than they had ever seen them before. That portion of my crop fed on mulberry the past four years shows no perceptible difference, hatching out and spinning about the same time as those fed on osage orange.

I would like to have the relative qualities of the silk thus differently fed thoroughly tested, and would be pleased to forward specimens of each to any one who could do so.

My worms hatched out this season on the 8th of May, and spun on the 19th of June, feeding forty-two days, this being seven days longer than previous seasons, owing to a cold storm that occurred in May, lasting about one week, rendering them almost inactive during that time; and I have used no artificial heat either at hatching or during the feeding time.

I have paid particular attention to cleanliness and ventilation in my cocoonery, keeping the doors and windows almost constantly open, even during the night when the weather was favorable. I attribute my success mainly to our fine dry climate. We have no dews, and rain and thunder storms are of rare occurrence during feeding season.

If Mr. Riley wishes to communicate with me, I shall be happy to give him all the information I possess in relation to this matter.

Yours, very respectfully,

SAMUEL CORNABY.

Prof. GLOVER, *Department of Agriculture, Washington, D. C.*

THE LOUISIANA RICE CROP.

The annual statement of James Wood, in the New Orleans Picayune, says that the rice crop of 1869-'70 was the largest ever grown in the State, though in quality it did not compare favorably with the production of previous years. The annexed table exhibits the general progress and value of this culture, showing the receipts of the several years since 1860 at New Orleans, the years extending from September 1 to August 31, and the barrels averaging 230 pounds:

| Year. | Barrels. | Av. price per bbl. | Total value. |
|------------|----------|-----------------------|--------------|
| 1860 | 7,300 | \$13 00 | \$94,900 00 |
| 1861 | 8,921 | 18 00 | 160,578 00 |
| 1862 | 8,636 | 20 00 | 172,720 00 |
| 1863 | 6,873 | 30 00 | 206,190 00 |
| 1864 | 9,866 | 25 00 | 246,650 00 |
| 1865 | 11,943 | 23 00 | 274,689 00 |
| 1866 | 20,464 | 20 00 | 409,280 00 |
| 1867 | 21,663 | 18 00 | 389,934 00 |
| 1868 | 41,317 | 17 00 | 702,389 00 |
| 1869 | 57,956 | 15 00 | 869,340 00 |

There are now seven steam rice mills in operation in the rice-growing portions of Louisiana, and two in New Orleans, all provided with the latest improvements for thoroughly cleaning and polishing rough rice or paddy. Mr. Wood thinks that if the cultivation of rice continues to increase in the same ratio that it has in the past few years Louisiana will soon outstrip Georgia and the Carolinas in the production; and that with a little more enterprise rice could be raised that would compare favorably with any from the Carolinas or the Indies. As yet most of those engaged in rice culture are indifferent to the improvement of the quality of the seed used. The varieties commonly grown are the white creole rice, the golden rice, and the white bearded rice. Last season two or three enterprising planters sent to Honduras for another variety, which, judging from the samples cleaned and shipped to New Orleans, is equal in quality to the best Carolina. About 300 acres of the Honduras seed are under cultivation this season.

Mr. Wood estimates the rice crop of this year at one-fourth less than that of 1869. The stage of the water was such in the latter part of spring and the beginning of summer that in the parishes of Lafourche, St. James, St. Charles, and St. John the Baptist, the fields suffered severely for want of irrigation. In Plaquemines, which is the great cereal parish of Louisiana, rice was flooded freely the whole season, and there the yield will be up to the average. So far the atmospheric conditions have been highly favorable to the curing and stacking of the grain.

MARKET PRICES OF FARM PRODUCTS.*

| Articles. | October. |
|-------------------------------------|------------------|
| NEW YORK. | |
| Flour—Superfine State | \$4 85 to \$5 00 |
| Western superfine | 4 85 to 5 00 |
| Extra western | 5 20 to 5 85 |
| Wheat—No. 1 spring, (new) | 1 30 to — |
| No. 2 spring, (old) | 1 08 to 1 15 |
| No. 3 spring, (old) | 1 05 to — |
| Winter red, and amber western | 1 27 to 1 32 |
| Corn—Western, mixed | 85 to 87 |
| Oats—Western | 51 to 53 |
| State | to — |

* Record made as near the 1st of the month as practicable.

Market prices of farm products—Continued.

| Articles. | October. | | |
|--|------------------|----|--------------------|
| Hay—Shipping qualities | \$20 00 | to | — |
| Prime | | to | — |
| Pork—Mess | 24 62 | to | \$24 75 |
| Prime mess | 21 50 | to | 23 50 |
| Beef—Plain mess | 12 00 | to | 15 50 |
| Extra mess | 16 00 | to | 18 50 |
| Lard—Prime | 14 $\frac{1}{4}$ | to | 16 $\frac{1}{4}$ |
| Butter—Western | 20 | to | 30 |
| State dairy | 24 | to | 42 |
| Cheese—Dairy | 5 | to | 13 |
| Factory | 5 | to | 15 |
| Cotton—Low middling uplands | 16 | to | — |
| Middling uplands | 16 $\frac{1}{2}$ | to | — |
| Tobacco—Sound lugs, light grades | 7 $\frac{1}{2}$ | to | 8 |
| Common leaf, light grades | 8 $\frac{1}{4}$ | to | 9 |
| Medium leaf, light grades | 9 $\frac{1}{4}$ | to | 9 $\frac{3}{4}$ |
| Wool—Combing fleece | 55 | to | 60 |
| Extra pulled | 37 | to | 42 |
| Texas common, unwashed | 23 | to | 26 |
| CHICAGO. | | | |
| Flour—White winter extra | 5 25 | to | 7 50 |
| Red winter extra | 4 75 | to | 5 50 |
| Spring, extra good to choice | 5 00 | to | 5 50 |
| Superfine | 3 25 | to | 3 75 |
| Wheat—No. 1 spring | 1 05 | to | 1 05 $\frac{1}{2}$ |
| No. 2 spring | 1 04 | to | 1 05 $\frac{1}{4}$ |
| No. 3 spring | 82 | to | 96 |
| Corn—No. 2 | 63 | to | 63 $\frac{1}{2}$ |
| Rejected | 59 $\frac{1}{2}$ | to | 60 $\frac{1}{4}$ |
| Oats—No. 2 | 36 $\frac{1}{4}$ | to | 37 |
| Rejected | 34 | to | 35 |
| Hay—Timothy pressed, (on track) | 15 00 | to | 16 00 |
| Prairie pressed, (on track) | 10 50 | to | 11 50 |
| Pork—Prime mess | 22 | to | 22 $\frac{1}{2}$ |
| Mess, (new) | | to | 25 |
| Beef—City mess | 12 | to | 12 $\frac{1}{2}$ |
| Country mess | 11 | to | 11 $\frac{1}{2}$ |
| Extra mess | 14 | to | 14 $\frac{1}{2}$ |
| Lard—In tierces | 14 $\frac{3}{4}$ | to | 15 |
| No. 1 | 14 | to | 14 $\frac{1}{2}$ |
| Butter—Choice firkin | 24 | to | 26 |
| Common to medium | 15 | to | 18 |
| Wool—Unwashed, fine | 24 | to | 28 |
| Medium and coarse | 29 | to | 30 |
| Tub | 45 | to | 50 |
| CINCINNATI. | | | |
| Flour—Family | 5 75 | to | 6 00 |
| Extra | 5 50 | to | 5 75 |
| Superfine | 4 75 | to | 5 00 |
| Wheat—No. 1 white | 1 30 | to | 1 35 |
| No. 2 white | | to | — |
| No. 1 red | 1 18 | to | — |
| No. 2 red | 1 15 | to | — |
| Corn—White | | to | 70 |
| No. 1 | | to | — |
| No. 2 | 66 | to | 67 |
| Oats—No. 1 mixed | 43 | to | 45 |
| No. 2 mixed | 40 | to | 43 |

Market prices of farm products—Continued.

| Articles. | October. | |
|--|----------|------------|
| Hay—Common | \$12 00 | to \$14 00 |
| Loose pressed | 20 00 | to 21 00 |
| Pork—City, per barrel | 24 50 | to 24 75 |
| Lard—Prime steam | 14½ | to — |
| Kettle, in kegs | 17 | to 17½ |
| Butter—Choice Ohio | 31 | to 33 |
| Fair to good | 25 | to 30 |
| Cheese—Choice factory | 13 | to 15 |
| Western Reserve | 11 | to 13½ |
| Cotton—Low middling | — | to 14½ |
| Middling | — | to 15½ |
| Tobacco—Common lugs, West Virginia | 4 50 | to 6 50 |
| Ohio | 5 50 | to 6 25 |
| Kentucky | 7 25 | to 9 50 |
| Wool—Tub-washed | 45 | to 48 |
| Fleece-washed, manufacturing | 40 | to 43 |
| combing | 42 | to 45 |
| Unwashed, manufacturing | 30 | to 31 |
| combing | 32 | to 35 |
| ST. LOUIS. | | |
| Flour—Spring | 3 90 | to 4 15 |
| Winter | 4 25 | to 7 70 |
| Super | 4 00 | to 4 25 |
| Wheat—No. 1 | 1 35 | to 1 40 |
| No. 2 | 1 13 | to 1 25 |
| No. 3 | 1 05 | to 1 07 |
| Choice | 1 25 | to 1 30 |
| Corn—Mixed | 56 | to 58 |
| Yellow | 67 | to 69 |
| White | 65 | to 70 |
| Hay—Prime, tight pressed | 17 00 | to — |
| Choice, tight pressed | 18 00 | to 18 50 |
| Pork—Mess | 25 00 | to — |
| Butter—Choice yellow | 29 | to 31 |
| Ohio | 30 | to 35 |
| Cheese—Factory | 14½ | to 16 |
| Western Reserve | 13 | to — |
| Cotton—Middling | 16 | to 16½ |
| Tobacco—Factory lugs | 5 50 | to 6 50 |
| Common leaf | 8 00 | to 9 00 |
| Medium | 9 25 | to 10 00 |
| Wool—Tub washed | 40 | to 47 |
| Fleece washed | 31 | to 40 |
| Unwashed combing | 35 | to 41 |
| Pulled | 30 | to 35 |
| NEW ORLEANS. | | |
| Flour—Superfine | 4 25 | to — |
| Extras, (according to grade) | 5 12½ | to 6 50 |
| Corn—Mixed | 72½ | to — |
| Yellow | 79 | to — |
| White | 78 | to 80 |
| Oats—Light | 48 | to — |
| Prime | 51 | to 53 |
| Hay—Choice | 24 50 | to 25 50 |
| Prime | 25 00 | to 25 50 |
| Pork—Mess | 25 75 | to 26 00 |
| Lard—In tierces | 16½ | to 16½ |
| Kegs | 19 | to 20 |
| Butter—Choice Goshen | 43 | to 44 |
| Western | 28 | to 32 |

(then 12.38 inches,) the driest year since the observations commenced, and in both years the harvest has been very good both in wheat and barley, except that in some localities the wheat-fly maggot has been very destructive. In 1864, the next driest year, the harvest was also very good. The rain-table shows the following results: In 1859 there was a fall of 14.44 inches in the first eight months of the year, and a productive harvest. In 1860 23.08 inches fell, and the harvest was very bad; in 1861 there was a moderate fall of 14.75, and the harvest was again good; in 1862 the fall increased to 18.24, (March and July being wet,) and the harvest was again very bad; in 1863, with 16.53, (the excess in August, otherwise the driest year,) the most productive harvest of years was the result. In 1864, with 12.71, the harvest was very good, and in 1865, with 14.09, harvest was rather below average, owing to rust in August. In 1866, the great flood year, with 19.29, the harvest was very bad, and again in 1867, another flood year, with 21.33, the harvest was still worse. In 1868, with a decrease to 12.38, the harvest was very good; in 1869, with 16.23, the harvest was below average; and this year, with 12.41, the harvest is generally good.

AGRICULTURAL STATISTICS OF IRELAND.

The collection of these statistics was commenced June 1, and occupied nearly two months, about 600,000 holdings having been visited and a return made from each. The total acreage under all crops this year was 5,642,556 acres, against 5,577,780 acres in 1869. The wheat acreage shows an increase of 19,546 acres, and that of oats, 36,476. In barley there is an increase of 19,242 acres; in bere and rye, 581 acres; and in beans and peas, 760 acres. Green crops show an increase of 29,455 acres, the largest amount being in the extent under turnips, which increased 16,987 acres. There is an increase in the extent under meadow and clover of 105,119 acres, and a decrease in flax of 34,359 acres. The extent under grass is 9,990,968 acres, against 10,041,390 acres in 1869; fallow, 19,054 acres, against 20,634 in 1869; wood and plantations, 321,557, against 320,461 in 1869; bog and waste unoccupied, 4,345,789, against 4,359,609 in 1869.

The returns of live stock as compared with those for 1869, show an increase of 3,105 horses, 62,705 cattle, and 377,108 swine. Sheep exhibit a decrease of 317,211. The estimated value of horses, cattle, sheep, and pigs is £35,518,465, being an increase of £554,875 over preceding year.

DISEASES OF CATTLE IN EUROPE.

The foot and mouth disease appears to be spreading to an alarming extent in England. The Mark Lane Express states that accounts from Dorsetshire continue bad. Sixty-one fresh cases were reported in the Wimborne district. Thirty-three returns, embracing 198 cattle and 55 swine, were read at the committee's meeting at Sturminster-Newton. Sherborne returns report 232 diseased cattle on twenty-two farms; Bridgeport, 54 on nine farms. In the border county of Somerset thirty farms have the disease on them. The disease is spreading in East Lancashire. During the preceding week it broke out on twenty-seven farms and af-

feeted 211 head of cattle, scattered over ten townships. In Berkshire the herds of Inglewood, Balsdon, and Templeton farms are infected. But one infected farm is reported thus far in Derbyshire. In Westmoreland 8 cases are reported. In Cumberland the disease has assumed a virulent form, and its spread is said to be of great magnitude. In the Carlisle division 27 cases are reported; 9 in the district around Cockermouth; 50 in the neighborhood of Wigton; 3 at Longton, and 37 near Brampton. The disease has broken out in Wales, on St. Twinorell's farm, near Pembroke. It has also made its appearance in Leicestershire.

The government veterinary department has received information from Berlin to the effect that the cattle plague, after breaking out in the palatinate, has followed in the wake of the Prussian army. It has extended from Coblenz to Saarbruck, and thence to the Bavarian palatinate, Northern Lorraine, and Alsace. It is supposed to have been imported from Podolia, through Upper Silesia, by means of the herds intended for the provisioning of the army. The disease is chronic in that breed, but the wants of the army are so pressing that there is no possibility of doing without these cattle, and the only thing to be done is to enforce local precautions.

WOOL-GROWING IN URUGUAY.

Mr. E. W. Loggin, of Uruguay, gives the following account of the method of feeding and managing sheep in that country:

Sheep are kept in large flocks of one to three thousand, and are taken care of by a man on horseback. They are gathered on one spot at night, and, by constant watching for a month or so, are taught to stay there. In winter they are not allowed to go off to feed until the dew is off the grass, as it is supposed to make them very thin. The rams are put into these flocks (which generally have a considerable percentage of wethers) early in October, thereby bringing the lambing on in March and April. Forty per cent. of lambs to a mixed flock is considered very good, but a flock consisting entirely of breeding ewes will give 70 to 90 per cent. It has been the custom to have two lambing seasons, one in March and one in September, but it is now generally allowed that one lambing is more advantageous, bringing as large an increase in the long run, and the sheep keeping in better condition.

* The sheep are a cross of the original sheep of the country, a very loose, long-wooled sheep, something like the black-faced sheep in Scotland regarding the fiber of the wool, but I should say inferior in every other respect, it being almost impossible to fatten them. These sheep were crossed with the English Leicester and Southdown, and the pure Merino; but the English blood being found so liable to scab, the Rambouillet took their place, producing a very fine, although not a very long, wool, and plenty of it; an average flock yielding an average of 4 pounds per fleece. These sheep ten years ago were worth 12s. a head after shearing, but to-day would scarcely command 12d. Saxony rams have been introduced of late years and have proved very remunerative, being very fine and close in their wool, and shearing up to 15 pounds per fleece. Ten years ago fine wool was greatly in demand, good half-breed Merino selling in Montevideo at 10d. to 1s. per pound, but this class of wool is not nearly so much in demand now, a longer staple being preferred, and consequently wool has fallen to 5d. per pound.

Shearing costs about five farthings a sheep, a ram two-pence, but the farmer has to keep the shearers during the shearing, and find men for catching, tying, and bagging or baling, as the case may be. A fat ewe is worth 2s. 6d., and a fat wether about 3s. 4d. for market; a good average wether weighing about 14 pounds to the quarter.

TREATMENT OF LIQUID SEWAGE IN GREAT BRITAIN.

The first report of the British Association Sewage Committee states, that at fifteen places which are sewered wholly or partially the liquid sewage is subjected to treatment either by allowing it to remain for a time in settling tanks, from which the deposit is occasionally removed, as at Burton-on-Trent, Birmingham, Epsom, Fareham, and Andover, or by filtering, as at Uxbridge and Ealing. In eight instances deodorizing materials are added to the sewage: Lime and carbolic acid are used at Carlisle and Harrow; lime alone is used at Leicester; lime and chloride of lime at Luton; perchloride of iron at Cheltenham; perchloride of iron and lime at Northampton; ferruginous clay, treated with sulphuric acid, at Stroud. At Leamington the lime treatment has lately been superseded by a method by which the sewage is clarified and a deposit separated, which is sold as manure. In regard to the effects thus produced, it is stated that at Leicester the sewage runs off as pure as ordinary rain water; at Ealing it is free from smell, colorless, and harmless to vegetable or animal life; at Stroud and Luton the effect is stated to be satisfactory; at Harrow the nuisance is somewhat mitigated, and at Abergavenny the stench is said to be abated by the treatment of the sewage; at Bury St. Edmunds upward filtration, through charcoal and gypsum, has been abandoned as too costly, and in favor of irrigation; at Banbury treatment of the sewage has failed, and irrigation is now resorted to; at Hereford, where it was proposed to be adopted, it has not been tried on the score of expense; at Tunbridge it is about to be tried; and at Hastings and Cambridge experiments are being made. The cost of treatment amounts to £1,200 per annum at Leicester, for a population of 89,000, discharging into the sewers. At Ealing, with a population of 7,500, the annual cost is £300. At Luton, with a population of 18,000, the annual cost is £500; at Cheltenham, with a population of 36,000, it is £350; at Uxbridge, with 7,000 population, it is £200; and at Alton, with 3,000 population, it is £46. The solid deposit obtained by treating liquid sewage is sold at prices varying from 6d. to 2s. 6d. per ton. At Leicester as much as 5,000 tons is produced. At Luton the deposit is mixed with night-soil; at Banbury with street-sweepings; and at Stroud it is made the basis of a manure that is said to be sold at £7 10s. per ton.

In only fifteen places out of the ninety-six where the water-carriage system of removing excretal refuse is adopted, either generally or partially, is the sewage applied for irrigating land. Of these places eight are completely sewered; in eleven of them water-closets are general, and in two they are partial. The remaining seven towns are only partially sewered and in three of these towns water-closets are general, while privies are general in the other four towns. At most places the application of the sewage to land has been found to exercise a most beneficial influence on the condition of the streams receiving the drainage of the district. Even where only the solid portion of the sewage is separated by filtration or precipitation, the state of the rivers receiving the discharge is to some extent improved. Generally speaking, no objections appear to have been made to the application of sewage for irrigation; and where such objections have been urged, on the ground that the application was offensive and injurious, they do not appear to have been supported by medical authority. In most cases the application of sewage for irrigation has not been attended with any apparent change in the sanitary condition of the districts, but there is said to be a marked improvement at Braintree. The number of acres irrigated by the sewage

of the fifteen places referred to, with an aggregate population of about 680,000, is about 1,100 acres, of various characters, and situated at distances from the center of the respective towns ranging from one-half mile to three miles, and from the outskirts one-fourth of a mile to one and a fourth mile.

SCIENTIFIC NOTES.

The following recent notes from scientific sources have a practical bearing upon the pursuits of agriculture:

Observations on some peculiarities of the soil of the Landes.—Mr. Faye describes in the *Comptes*, in a lengthy paper, a peculiar subsoil, locally known (in the départements Des Landes and a portion of that of La Gironde) as *allios*. This is a layer of peculiarly agglomerated sand, intermingled with small pebbles, and containing organic matter, as well as oxide of iron. It (the *allios*) is met with at a depth of about one meter below the surface; and above as well as below it (its thickness hardly ever exceeding one to two meters, and generally less) is found the loose sand which, in former years, was constantly blown about by the winds, but is now retained in its place by the plantations of the pinadas, (*Pinus maritima*.) The author ascribes the origin of these *allios* to the fact that, during winter and early spring, these extensive plains (the départements above named are the largest in surface of all the French départements) are inundated by rain water, which, being slowly absorbed by the soil, forms, (at the depth already mentioned,) in consequence of the matter it contains in solution, and by evaporation, a cement which causes the agglomeration of the underlying sandy subsoil. In many parts of the barren moors of the Netherlands and Hanover a similar subsoil occurs, being locally known as *oerbanken*; they often contain the marsh-iron ore in workable quantities.

Fatty matters contained in the chyle of herbivorous animals.—The *Comptes* says: Among other fatty substances discovered by Dr. Dobroslavine, is a mixture of stearic and palmitic acids, oleine, and fat, containing a small quantity of nitrogen.

Experimental researches on the modifications of the immediate composition of bones.—F. Pappillon relates in the *Comptes*, at length, some experiments instituted with live animals, to which were given, among their food, phosphate of strontia, phosphate of alumina, and phosphate of magnesia. These experiments were continued for several months, and the animals, (pigeons and rats,) which did not seem to be in the least affected by partaking of the small daily doses of the mineral matters alluded to, were killed, and their bones submitted to analysis, with the following results: Ash of bones of pigeon, in 100 parts: lime, 46.75; strontia, 8.45; phosphoric acid, 41.80; phosphate of magnesia, 1.80; residue, 1.10—total, 99.80. Bones of a rat, in 100 parts: alumina, 6.95; lime, 41.10. Bones of another rat, (to which phosphate of magnesia had been given,) in 100 parts: magnesia, 3.56; lime, 46.15.

Purification of dirty water.—Since, in dry seasons, any water may be of high value, at least for cattle drinking, S. Meunier, in the *Cosmos*, advises to place in a large-sized cask a false bottom, perforated with some holes, and to put on fiat bottom, first, clean pebbles, next, well washed sand, then a layer of coarsely-granulated charcoal, and, over all this, a piece of canvas. The water, even that accidentally standing in shallow ditches after a shower of rain, may be poured into this filter, and thus become available for cattle drinking, though it may be not quite clear.

New use for hyposulphite of soda.—In the *Cosmos*, S. Meunier states that experiments made with this salt have proved it to be very superior for use for washing linen to the carbonate of soda now in use; it has no corrosive action, and does not cause a yellow coloring of the fabric after some time. Borax, largely used in the Netherlands and Belgium, is a better substitute still, and, by its use, white fabrics assume an agreeable bluish hue, which, in many instances, renders the subsequent use of washing-blue unnecessary.

Composition of rain water.—The *Cosmos* contains an analysis, by Dr. G. Tissandier, of some rain water fallen at Paris on the 1st and 8th of July last. The portion (only some drops) purposely collected on watch-glasses) which fell on the first-named date, contained no less than 4.6% per cent. of solid matter; microscopical observation proved the existence therein of debris of woven tissues, threads, coal dust, starch granules, sand, and debris of wood. On being evaporated, a drop, weighing 0.032 gram, and then seen under the microscope, was proved to contain crystals of nitrate of ammonia and crystals of common salt. On the last-named date, a liter of water was collected on the top of a roof in Paris; this water, on being analyzed, yielded a total solid, dry residue of 0.0658 gram, containing insoluble mineral matters, 0.0108 gram; insoluble organic matter, 0.034 gram; soluble salts, 0.021. This rain water was found to con-

tain 0.02 gram of nitrate of ammonia; and, since this salt contains 35 per cent. of nitrogen, it follows that the 10 millimeters of rain-fall of the 5th of July; carried down 70 grams. of nitrogen per hectare, besides the organic matter.

The new system of conveying beet-root juice.—In the *Bulletin de la Société d'Encouragement pour l'Industrie Nationale*, M. A. Payen treats of a contrivance whereby the beet-root juice is pressed from the roots, and carried, by cast-iron pipes, to the beet-root sugar-works. The roots are pulped, and the juice expressed, so to say, on the very spot where the roots are grown; and the juice is conveyed, by pipes laid under ground (as are gas and water pipes) and along the roads, to the beet-root sugar-works, while a portion of these pipes are used in summer time to carry and force up fresh water to the farms.

Madder: its application to dyeing and printing.—In the *Annales du Genie Civil* is given the first portion of a lengthy memoir, by D. Kaepelin, giving, in the first place, an account of the history of the dispersion of madder from its native soil into Europe, where it was reintroduced from the Levant by the Dutch in the sixteenth century. By order of Charles V it was cultivated in the Alsace, and, since 1789, in the then Comtat d'Avignon, (now département de Vaucluse.) The author describes, at great length, the mode of cultivation of Marena madder grown in the Derbent, (a portion of Russia, formerly a Persian province.) The soil of that district is a rich alluvial clay, containing a large quantity of calcareous matters and humus. The madder seed is sown in November, and the roots are collected in the fourth following spring, (April.) The roots are first placed in well-aired sheds, and next submitted to a peculiar process of steaming, by being placed in what may be termed tanks dug in the soil, two meters deep and one wide. These tanks are first heated by means of the combustion of wood to such an extent that the sides become red hot. When this is effected the madder roots, previously watered, are thrown upon smoldering embers, and when the hole is filled, covered with coarse woolen cloths, and left in the hot tanks for six hours. The roots are then removed, and next dried in the sun. A great portion of this paper is, by the acknowledgment of its author, who has been in Russia, abstracted from the works of MM. Persoz, Girardin, Schutzenberger, and others.

Composition of sugar cane.—O. Popp has analyzed fresh sugar cane, after pulling the leaves off, with the following results, as stated in the *Zeitschrift für Chemie von Beilstein*: Martinique and Guadeloupe cane (America) contains, in 100 parts: water, 72.22; cane sugar, all crystallizable, 17.80; glucose, 0.28; cellulose, 9.30; salts, 0.40. African canes: Middle Egypt (Cairo) contains, in 100 parts: water, 72.15; cane sugar, 16.0; glucose, 2.3; cellulose, 9.2; salts, 0.35. Upper Egypt: water, 72.13; cane sugar, 18.1; glucose, 0.25; cellulose, 9.1; salts, 0.42. The author adds, the quantity of sugar above quoted is an averaged quantity, since its percentage may reach as high as 20, while the glucose may be entirely absent, and is so in some kinds of cane, (different species of the plant,) and with good cultivation in all kinds. Sugar cane dried at 100°, previously deprived of its leaves, yielded from 3.8 to 4.3 per cent. of ash. The dried leaves yield by themselves from 8.0 to 8.5 per cent. of ash. The composition of the ash of the American cane, without leaves, is, in 100 parts: potassa, 7.66; soda, 6.45; lime, 12.53; magnesia, 6.61; oxide of iron, 0.56; silica, 43.75; phosphoric acid, 5.45; sulphuric acid, 16.53; chlorine, 0.21—together, 99.75. Ash of the leaves, in 100 parts: potassa, 10.65; soda, 3.26; lime, 8.19; magnesia, 2.45; oxide of iron, 0.85; silica, 65.78; phosphoric acid, 1.25; sulphuric acid, 2.18; chlorine, 1.65; carbonic acid, 3.55—together, 99.81.

ITEMS FROM VARIOUS SOURCES.

THE LUMBER INTEREST OF THE PACIFIC STATES.—It is stated that there are 40 saw-mills on the Pacific slope, requiring an average of 100 men each. Forty ships, 30 brigs, and 60 schooners are engaged in transporting this lumber, and employ about 1,000 men; while 2,000 men are employed in San Francisco in handling the lumber. The annual production is about 150,000,000 feet, worth some \$8,000,000.

THE RAMIE.—A stock company has been organized in New Orleans for the extensive culture of the ramie plant and the preparation of the fiber of the same for market.

BEET CULTURE IN CALIFORNIA.—Mr. A. B. Gilbert, one of the number cultivating beets for the Sacramento Beet Sugar Company, has 10 acres of sugar beets on the American River bottom, yielding 25 tons to the acre. The company pay him \$5 per ton. The cost of cultivation is

stated to be about \$30 per acre. Mr. Gilbert thinks that 40 tons to the acre may be raised in ordinary seasons.

Experiments in beet-sugar making by a new process have lately been made at Sacramento, and the *Alta California* says:

"There is no difficulty whatever in making sugar from our beets. The percentage of sugar and the cost are, however, left undetermined; until these are proved, the main object of the work is not realized. Something new and unexpected has revealed itself. In Europe the beet attains its maximum of sugar in its latest period of growth before the frost sets in. Here it has lost half its sugar during the last six weeks. The beets taken from the same soil and milled by Wadsworth in December, had the full complement. This is a puzzle which proves the opinion that European experience is not a safe guide in California. Evidently the operator here understands his business, but we must wait another year before we can judge what soil and what cultivation is best for sugar beets. Much light will be thrown on the subject after the more complete sugar works—now about to start at Alvarado—shall give us further revelations."

TOBACCO CULTURE IN CALIFORNIA.—A farmer of Butte County, California, is experimenting successfully with tobacco. He has an acre and a half of the best variety, with a most encouraging promise of a fine yield. He thinks he will gather 2,000 pounds, worth \$300.

ITALIAN CHESTNUTS.—Italian chestnuts are doing well in Santa Barbara and in Los Angeles, California. The tree is said to be a rapid grower, hardy, and a prolific bearer. It grows from seed and needs no grafting. One tree three years old has 23 nuts upon it this season.

WHEAT IN FLORIDA.—Dr. C. C. Collins reports that in January last he planted a grain of wheat in his garden. The plant threw out 17 heads which yielded 538 grains, gathered in May. It was grown on a high ridge of indifferent sandy soil.

EGYPTIAN MILLET.—The editor of the Florida Land Register has been shown a specimen of this plant grown in a garden at Jacksonville. It measures 11 feet in length, including the seed-head of 10 inches. It was taken from a patch of a few feet square, from seed sown broadcast in fair garden soil, and the crop was nearly all of the same height. This variety of millet, it is said, will bear repeated cutting, throwing out fresh stalks from the root, making upon good land a large quantity of excellent fodder. The seed is nutritious, and cattle, mules, and, particularly, poultry, are very fond of it.

CALIFORNIA ALMONDS.—Hon. John Bidwell, of Butte County, California, last month sent to San Francisco three tons of almonds grown upon his rancho. They are of the paper-shell variety and of superior quality, commanding 25 cents per pound in the market. This consignment was only a portion of his crop.

THE JUTE FIBER.—Mr. E. H. Derby, of Boston, Massachusetts, writing to the Commissioner in relation to the jute plant, the seed of which the Department has been distributing in the South, says: "If the plant prospers few planters will know how to separate the fiber. This is done in India by steeping the full-grown plant in a pond or stream, when the fiber peels off, leaving the wood, which answers for basket-work." Mr. Derby thinks the plant will grow wherever sugar, rice, and cotton are successful, but will probably do best on the river bottoms of Mississippi.

METEOROLOGY.

[COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY THE OBSERVERS OF THE SMITHSONIAN INSTITUTION.]

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and amount of rain-fall (in inches and tenths) for September, 1870, as reported by the observers at the stations named. Observations daily at 7 a. m., and 2 and 9 p. m. Tables from reports received up to October 19; notes from reports received up to October 17.

[illegible]

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum temperature. | Date. | Minimum temperature. | Mean temperature. | Rain-fall. |
|--------------------|--------------|-------------------------|----------|----------------------|-----------------------|----------------------|-------------------|------------|
| RHODE ISLAND. | | | | | | | | |
| Newport | Newport | W. A. Barber | 16 | 81 | 13 | 51 | 66.8 | 1.57 |
| CONNECTICUT. | | | | | | | | |
| Columbia | Tolland | Wm. H. Yeomans | 23 | 90 | 13 | 42 | 66.2 | 1.05 |
| Middletown | Middlesex | Prof. Jno. Johnston | 1 | 89 | 12 | 41 | 61.5 | 0.96 |
| Southington | Hartford | Luman Andrews | 1 | 81 | 11, 12 | 50 | 64.5 | 1.16 |
| Colebrook | Litchfield | Charlotte Rockwell | 1 | 87 | 12 | 43 | 62.3 | 1.55 |
| Brookfield | Fairfield | Rev. S. W. Roe | 2 | 90 | 12, 13 | 42 | 64.6 | 4.70 |
| Averages | | | | | | | 64.4 | 1.84 |
| NEW YORK. | | | | | | | | |
| Moriches | Suffolk | E. A. Smith & daugh'rs | 1 | 80 | 12, 22 | 44 | 60.3 | 2.65 |
| South Hartford | Washington | G. M. Ingalsbe | 1 | 82 | 20 | 47 | 66.2 | 2.15 |
| Caldwell | Warren | A. M. Strong | 23 | 82 | 12 | 44 | 63.0 | 5.35 |
| Garrison's | Putnam | Thos. B. Arden | 3 | 85 | 12, 13, 19 | 49 | 63.8 | 2.55 |
| Throg's Neck | West Chester | Miss E. Morris | 24 | 83 | { 11, 12, 13, 14 } | 55 | 68.2 | ..... |
| Cooper Union | New York | Prof. O. W. Morris | 25 | 84 | 12 | 55 | 68.9 | 2.38 |
| Brooklyn | Kings | Isaac P. Mailer | 24, 25 | 84 | 12 | 51 | 67.7 | 1.70 |
| Flatbush | do | Rev. Eli T. Mack | 25 | 86 | 12 | 51 | 65.9 | 1.30 |
| Glasco | Ulster | D. B. Hendricks | 3 | 84 | 12 | 40 | 63.6 | 2.34 |
| Minaville | Montgomery | J. W. Bussing | 1 | 85 | 12 | 42 | 65.6 | 2.40 |
| Cooperstown | Otsego | G. Pomeroy Keese | 2 | 85 | 12 | 35 | 61.0 | 2.76 |
| Gouverneur | St. Lawrence | C. H. Russell | 2 | 81 | 12 | 37 | 58.7 | 4.10 |
| North Hammond | do | C. A. Wooster | 1 | 93 | 10, 11 | 54 | 68.8 | 3.13 |
| Honseville | Lewis | Walter D. Yale | 1 | 83 | 11 | 42 | 61.1 | 4.08 |
| Utica | Oneida | J. Gilbert Williams | 1 | 85 | 12 | 42 | 62.8 | 3.10 |
| South Trenton | do | Storrs Barrows | 15 | 82 | 13 | 40 | 61.6 | 1.18 |
| Cazenovia | Madison | Prof. Wm. Soule | 1 | 85 | 12 | 39 | 61.1 | ..... |
| Oneida | do | S. Spooner, M. D. | 1 | 86 | 12 | 42 | 60.5 | 7.20 |
| Depauville | Jefferson | Henry Haas | 1 | 82 | 28 | 46 | 62.7 | 4.57 |
| Oswego | Oswego | Wm. S. Malcom | 2 | 79 | 13 | 43 | 61.4 | 2.28 |
| Palermo | do | E. B. Bartlett | 2 | 86 | 12 | 40 | 61.9 | 3.75 |
| Waterburg | Tompkins | D. Trowbridge | 2 | 87 | 11, 13 | 37 | 60.2 | ..... |
| Nichols | Tioga | Rob't Howell | 2 | 87 | 20 | 38 | 62.3 | ..... |
| Newark Valley | do | Rev. Sam'l Johnson | 1 | 88 | 13 | 34 | 61.4 | 2.20 |
| Himrods | Yates | Gilbert D. Baker | 1 | 84 | 20 | 43 | 62.9 | 3.19 |
| Rochester | Monroe | H. W. Mathews | 9 | 84 | 20 | 47 | 64.2 | 5.01 |
| Little Genesee | Allegany | Dan'l Edwards | 1 | 85 | 22 | 37 | 60.4 | 3.54 |
| Suspension Bridge | Niagara | W. Martin Jones | 8 | 86 | 20 | 46 | 64.1 | 3.85 |
| Lockport | do | B. Wheaton Clark | 1 | 82 | 20 | 50 | 63.8 | 3.75 |
| Buffalo | Erie | Wm. Ives | 8 | 91 | 12, 19 | 46 | 64.7 | 3.92 |
| Averages | | | | | | | 63.3 | 3.25 |
| NEW JERSEY. | | | | | | | | |
| Paterson | Passaic | Wm. Brooks | 3 | 90 | 12 | 47 | 66.3 | 2.77 |
| Newark | Essex | W. A. Whitehead | 25 | 83 | 13 | 47 | 65.3 | 2.80 |
| South Orange | do | Wm. J. Chandler, M.D. | 25 | 86 | 20, 22 | 41 | 65.3 | 3.07 |
| Trenton | Mercer | E. R. Cook | 1, 2, 25 | 84 | 12 | 50 | 70.3 | 1.34 |
| Rio Grande | Cape May | Mrs. J. R. Palmer | 1 | 90 | 20 | 45 | 68.6 | 2.88 |
| Moorestown | Burlington | Thos. J. Beans | 2 | 85 | 12, 13 | 52 | 66.8 | 1.28 |
| New Germantown | Hunterdon | A. B. Noll | 25 | 87 | 13 | 46 | 65.8 | 2.08 |
| Readington | do | John Fleming | 14 | 81 | 13 | 42 | 64.2 | ..... |
| Haddonfield | Camden | John Boadle | 1, 2, 25 | 82 | 12, 15 | 51 | 65.7 | 1.92 |
| Greenwich | Cumberland | Miss R. C. Sheppard | 3, 25 | 79 | { 12, 13, 20, 21 } | 52 | 66.5 | 2.33 |
| Vineland | do | John Ingram, M. D. | 1 | 85 | 12 | 49 | 67.3 | 2.83 |
| Averages | | | | | | | 66.6 | 2.33 |
| PENNSYLVANIA. | | | | | | | | |
| Nyces | Pike | John Grathwohl | 1 | 83 | 11, 20 | 49 | 60.0 | 1.20 |
| Hamilton | Wayne | Jas. D. Stocker | 1, 2, 15 | 84 | 11, 21 | 47 | 63.6 | 1.47 |
| Dyberry | do | Theodore Day | 15 | 81 | 20 | 31 | 60.4 | 1.31 |
| Fallsington | Bucks | Ebenzer Hance | 25 | 86 | 13 | 48 | 71.0 | 1.50 |
| Philadelphia | Philadelphia | Prof. J. A. Kirkpatrick | 3 | 85 | 12 | 54 | 70.1 | 1.60 |
| Germantown | do | Thos. Meehan | 26 | 89 | 12 | 52 | 68.7 | ..... |
| do | do | Ernest Turner | 24 | 86 | 12, 20 | 53 | 68.7 | 1.97 |
| Horsham | Montgomery | Miss Anna Spencer | 25 | 86 | 12, 20 | 50 | 66.4 | 2.92 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain-fall. |
|--------------------|----------------|-----------------------|--------------------|---------------------------|----------------------|---------------------------|------------------------|------------|
| PENN'A.—Con'd. | | | | | | | | |
| Plymouth Meeting. | Montgomery. | M. H. Corson | 25 | 86 | 12, 20 | 47 | 66.2 | In. |
| White Hall | Lehigh | Edw'd Kohler | 25 | 87 | 12 | 38 | 67.1 | 2.19 |
| Factoryville | Luzerne | Rodman Sisson | 1 | 84 | 12, 20 | 36 | 61.1 | 2.45 |
| Reading | Berks | J. Heyl Raser | 25 | 84 | 12 | 48 | 67.6 | 2.38 |
| West Chester | Chester | Geo. Martin, M. D. | 25 | 86 | 20 | 49 | 66.5 | 3.24 |
| Parkersville | do | F. Darlington, M. D. | 2 | 84 | 12, 13 | 50 | 67.2 | 2.12 |
| Tamaqua | Schuylkill | John Haworth | 24 | 88 | 20 | 33 | 61.5 | 2.30 |
| Catawissa | Columbia | A. Curtis | 25 | 87 | 12 | 38 | 62.5 | ... |
| Ephrata | Lancaster | W. H. Spera | 24 | 86 | { 13, 14 15, 20 } | { 50 | 67.2 | 4.48 |
| Carlisle | Cumberland | Wm. H. Cook, M. D. | 1, 25 | 86 | 12, 13 | 47 | 66.3 | 6.00 |
| Fountain Dale | Adams | S. C. Walker | 25 | 84 | 12 | 51 | 65.7 | 5.58 |
| Tioga | Tioga | E. T. Bentley | 2, 3 | 86 | 12 | 36 | 63.3 | 4.40 |
| Lewisburg | Union | Prof. C. S. James | 24 | 81 | 13 | 42 | 63.1 | 2.57 |
| Grampian Hills | Clearfield | Elisha Fenton | 8 | 84 | 20 | 36 | 60.4 | 2.78 |
| Johnstown | Cambria | David Peelor | 8 | 80 | 20 | 43 | 63.0 | 2.62 |
| Franklin | Venango | Rev. M. A. Tolman | 8 | 91 | 20, 21, 22 | 45 | 64.1 | 2.02 |
| Pittsburg | Allegheny | George Albree | 8, 9 | 84 | 21 | 48 | 66.9 | 1.10 |
| Greencastle | Franklin | Samuel W. Rhode | 25 | 89 | 20 | 47 | 69.2 | 6.00 |
| Connellsville | Fayette | John Taylor | 9 | 88 | 20 | 48 | 67.4 | ... |
| Brownsville | do | J. Allen Hubbs, M. D. | 9 | 90 | 22 | 48 | 71.0 | ... |
| New Castle | Lawrence | E. M. McConnell | 8, 9 | 80 | 22 | 45 | 66.2 | 1.90 |
| Beaver | Beaver | Rev. R. T. Taylor | 7 | 82 | 20, 21 | 46 | 65.3 | ... |
| Canonsburg | Washington | Rev. Wm. Smith, D. D. | 8 | 89 | 21 | 41 | 65.6 | 2.04 |
| Averages | | | | | | | 65.6 | 2.73 |
| DELAWARE. | | | | | | | | |
| Milford | Kent | Mrs. W. R. Phillips | 1 | 86 | 20 | 52 | 66.9 | 4.10 |
| Dover | do | J. H. Bateman | 25 | 86 | 13, 14 | 55 | 68.3 | 3.80 |
| Averages | | | | | | | 67.6 | 3.95 |
| MARYLAND. | | | | | | | | |
| Woodlawn | Cecil | Jas. O. McCormick | 2, 24, 25 | 82 | 12 | 49 | 66.6 | 3.56 |
| Fallston | Hartford | Geo. G. Curtiss | 14 | 93 | 12 | 51 | 68.2 | 4.20 |
| Annapolis | A. Arundel | Wm. R. Goodman | 2, 25 | 83 | 23 | 55 | 71.2 | 1.96 |
| Mt. St. Mary's | do | Prof. C. H. Jourdan | 25 | 83 | 12 | 52 | 65.6 | 6.61 |
| Averages | | | | | | | 67.9 | 4.08 |
| DIST. COLUMBIA. | | | | | | | | |
| Washington | Washington | Smithsonian Instit'n | 2 | 83 | 14 | 51 | 68.8 | 1.78 |
| VIRGINIA. | | | | | | | | |
| Johnsontown | Northampton | C. R. Moore | 4 | 85 | 12 | 56 | 71.0 | 1.05 |
| Hampton | Elizab'th City | Jas. M. Sherman | 3, 25 | 86 | 10 | 56 | 71.7 | 3.70 |
| Surry C. H. | Surry | B. W. Jones | { 3, 4 23, 26 } | { 91 | 12 | 53 | 73.1 | 1.68 |
| Comorn | King George | E. T. Tayloe | 2 | 86 | 21 | 54 | 71.3 | 1.25 |
| Vienna | Fairfax | H. C. Williams | 7 | 78 | 11 | 58 | 69.7 | 2.20 |
| Piedmont | Fauquier | Franklin Williams | 24 | 88 | 13 | 52 | 67.2 | 10.40 |
| Piedmont Station | do | Wm. A. Martin | 25 | 86 | 20, 23 | 50 | 66.9 | 9.55 |
| Markham Station | do | L. E. Payne | 25 | 86 | 30 | 50 | 65.5 | 12.83 |
| Staunton | Augusta | Prof. J. C. Covell | 2, 7 | 78 | 20 | 47 | 64.3 | 11.24 |
| Lynchburg | Bedford | Chas. I. Meriwether | 26 | 82 | 20, 21 | 53 | 69.8 | 9.25 |
| Near Wytheville | Wythe | Rev. Jas. A. Brown | 7 | 80 | 20, 21 | 45 | 64.2 | 1.30 |
| Averages | | | | | | | 68.6 | 5.86 |
| WEST VIRGINIA. | | | | | | | | |
| Romney | Hampshire | W. H. McDowell | 2, 25 | 90 | 20 | 42 | 69.9 | ... |
| Weston | Lewis | B. Owen | 8 | 86 | 20, 21 | 32 | 64.9 | ... |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum temperature. | Date. | Minimum temperature. | Mean temperature. | Rain-fall. |
|------------------------|-----------------|---------------------------|----------|----------------------|-------------------|----------------------|-------------------|------------|
| ARKANSAS. | | | | | | | | |
| Helena..... | Phillips..... | O. F. Russell..... | 6 | 96 | 28 | 59 | 76.6 | In. |
| Mineral Spring..... | Hempstead... | Harmon Bishop..... | 5, 6, 7 | 88 | 30 | 58 | 74.1 | 4.19 |
| Averages..... | | | | | | | 75.4 | 4.19 |
| TENNESSEE. | | | | | | | | |
| Elizabethton..... | Carter..... | Chas. H. Lewis..... | 1 | 88 | 20, 21, 22 | 52 | 69.2 | 2.10 |
| Lookout Mountain..... | Hamilton..... | Rev. C. F. P. Bancroft. | 10 | 81 | 21 | 61 | 70.3 | ..... |
| Clearmont..... | Warren..... | T. P. Wright..... | 6, 8, 26 | 81 | 19, 24 | 60 | 64.3 | ..... |
| Austin..... | Wilson..... | P. B. Calhoun..... | 8 | 85 | 4, 30 | 60 | 70.5 | 3.52 |
| Trenton..... | Gibson..... | W. T. Grigsby..... | 7 | 94 | 29 | 57 | 73.3 | 1.70 |
| La Grange..... | Fayette..... | W. E. Franklin, M. D. | 7 | 92 | 19 | 62 | 74.4 | 1.90 |
| Averages..... | | | | | | | 70.3 | 2.31 |
| KENTUCKY. | | | | | | | | |
| Pine Grove..... | Clarko..... | S. D. Martin, M. D..... | 8 | 86 | 20 | 58 | 69.7 | 3.61 |
| Danville..... | Boyle..... | O. Beatty..... | 8 | 90 | 6, 20, 21 | 62 | 72.8 | 3.50 |
| Shelby City..... | do..... | Howard Shriver..... | 7 | 85 | 20 | 56 | 70.4 | 3.35 |
| Near Louisville..... | Jefferson..... | Mrs. L. Young..... | 7 | 92 | 5, 20, 21 | 51 | 72.0 | 2.38 |
| Averages..... | | | | | | | 71.2 | 3.21 |
| OHIO. | | | | | | | | |
| Salem..... | Columbiana..... | J. E. Pollock..... | 2 | 87 | 29 | 48 | 65.8 | 2.75 |
| Steubenville..... | Jefferson..... | Joseph B. Doyle..... | 8 | 84 | 20, 21 | 49 | 68.8 | 2.73 |
| Painesville..... | Lake..... | E. J. Ferris..... | 2 | 82 | 12 | 50 | 65.4 | 4.56 |
| Milnersville..... | Guernsey..... | Rev. D. Thompson..... | 8, 9 | 87 | 19 | 48 | 66.8 | 3.00 |
| Cleveland..... | Cuyahoga..... | Mr. & Mrs. G. A. Hyde. | 1, 8 | 82 | 20 | 50 | 64.7 | 4.76 |
| Wooster..... | Wayne..... | Martin Winger..... | 8 | 96 | 22 | 46 | 69.7 | ..... |
| Adams' Mills..... | Muskingum..... | Charles A. Stilwell..... | 8 | 89 | 22 | 46 | 67.7 | 1.73 |
| Pennsville..... | Morgan..... | T. J. Bingman..... | 8 | 90 | 12 | 48 | 66.9 | 0.65 |
| Gallipolis..... | Gallia..... | A. P. Rogers..... | 8 | 88 | 21 | 48 | 70.3 | 1.43 |
| Oberlin..... | Lorain..... | S. Herrick..... | 1, 7, 8 | 88 | 13 | 46 | 65.6 | 2.55 |
| Kelley's Island..... | Erie..... | Geo. C. Huntington..... | 1 | 86 | 11, 12, 20 | 62 | 70.5 | 1.50 |
| Sandusky..... | do..... | Thomas Neill..... | 1 | 87 | 20 | 51 | 64.7 | 1.83 |
| Carson..... | Huron..... | Mrs. M. M. Marsh..... | 1 | 89 | 12 | 50 | 68.3 | 2.40 |
| North Fairfield..... | do..... | O. Burrass..... | 8 | 90 | 5, 11, 12 | 55 | 69.0 | 1.42 |
| Gambier..... | Knox..... | Frank Compton..... | 16, 24 | 80 | 21, 22 | 46 | 64.8 | 2.74 |
| Westerville..... | Franklin..... | Prof. John Haywood..... | 8, 9 | 91 | 20 | 51 | 68.5 | 1.37 |
| North Bass Island..... | Ottawa..... | Geo. R. Morton, M. D. | 1 | 92 | 3, 4 | 61 | 70.4 | 1.53 |
| Marion..... | Marion..... | H. A. True, M. D. | 8 | 88 | 12, 20 | 49 | 66.3 | 1.10 |
| Hillsboro..... | Highland..... | J. McD. Mathews, M. D. | 8 | 84 | 12 | 53 | 67.8 | 0.69 |
| Bowling Green..... | Wood..... | John Clarke..... | 8 | 95 | 19 | 46 | 69.7 | 2.85 |
| Kenton..... | Hardin..... | C. H. Smith, M. D. | 9 | 95 | 29 | 58 | 71.9 | 7.65 |
| Bellefontaine..... | Logan..... | Wm. Barringer..... | 8 | 90 | 3 | 52 | 68.0 | 1.50 |
| Urbana University..... | Champaign..... | Prof. M. G. Williams..... | 8 | 92 | 5, 21 | 54 | 69.0 | 0.47 |
| Carthage..... | Mercer..... | Prof. W. R. Mueller..... | 8 | 88 | 12 | 54 | 70.8 | 1.80 |
| Jacksonburg..... | Butler..... | I. B. Owsley, M. D. | 7, 8 | 90 | 18 | 56 | 71.4 | 1.39 |
| Mt. Auburn Inst..... | Hamilton..... | Prof. I. H. White..... | 8 | 87 | 12 | 57 | 72.0 | 0.49 |
| Cincinnati..... | do..... | G. W. Harper..... | 8 | 95 | 12 | 57 | 72.0 | 0.30 |
| Do..... | do..... | R. C. Phillips..... | 7 | 88 | 21 | 59 | 72.6 | 0.70 |
| College Hill..... | do..... | John W. Hammitt..... | 8 | 96 | 19, 20 | 59 | 72.6 | 0.15 |
| Averages..... | | | | | | | 68.7 | 2.00 |
| MICHIGAN. | | | | | | | | |
| Detroit..... | Wayne..... | F. W. Higgins..... | 8 | 92 | { 4, 13, 20, 21 } | { 53 } | 67.3 | 1.71 |
| Monroe City..... | Monroe..... | Miss H. I. Whelpley.. | 1, 8 | 88 | { 4, 11, 12, 20 } | { 58 } | 71.2 | 2.26 |
| Ann Arbor..... | Washtenaw.. | Mrs. N. H. Winchell.. | 8 | 89 | 5, 12 | 51 | 64.8 | 2.42 |
| Alpena..... | Alpena..... | J. W. Paxton..... | 8 | 74 | { 3, 11, 16, 17 } | { 52 } | 61.9 | 2.97 |
| Litchfield..... | Hinsdale..... | R. Bullard..... | 7 | 87 | 12 | 49 | 64.9 | 4.20 |
| Coldwater..... | Branch..... | N. L. Southworth..... | 8 | 89 | 12 | 44 | 65.4 | 1.87 |
| Grand Rapids..... | Kent..... | E. S. Holmes, D. D. S. | 7 | 89 | 12 | 49 | 67.6 | 2.77 |
| Northport..... | Lelanaw..... | Rev. Geo. N. Smith..... | 7 | 82 | 2, 3 | 50 | 62.7 | 2.75 |
| Otsego..... | Allegan..... | Milton Chaso, M. D. | 6, 7 | 100 | 20 | 41 | 67.6 | ..... |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain-fall. |
|--------------------|------------------|------------------------------------|--------|---------------------------|---|---------------------------|------------------------|------------|
| MICHIGAN—Cont'd. | | | | | | | | |
| Copper Falls..... | Keweenaw..... | S. H. Whittlesey, M. D. | 7 | 76 | 2 | 44 | 57.4 | 1.05 |
| Ontonagon..... | Ontonagon..... | Edwin Ellis, M. D..... | 21 | 78 | { 26, 27, 28 } | { 50 } | 61.7 | ..... |
| Averages..... | | | | | | | 64.8 | 2.44 |
| INDIANA. | | | | | | | | |
| Vevay..... | Switzerland..... | Chas. G. Boerner..... | 8 | 90 | 20 | 53 | 71.4 | 1.20 |
| Mt. Carmel..... | Franklin..... | J. A. Applegate and daughters. | 7 | 91 | 12, 19 | 58 | 70.8 | 2.20 |
| Laconia..... | Harrison..... | Adam Crozier..... | 8 | 87 | 31 | 57 | 70.1 | 2.33 |
| Knightstown..... | Rush..... | D. Deem..... | 8 | 91 | 21 | 50 | 69.7 | 1.37 |
| Indianapolis..... | Marion..... | Dr. Hadley and R. D. Craighead. | 8 | 88 | 21 | 51 | 68.0 | 1.09 |
| Near La Porte..... | La Porte..... | F. J. Andrew..... | 8 | 91 | 4 | 54 | 68.1 | 2.75 |
| Rensselaer..... | Jasper..... | J. H. Loughridge..... | 23 | 87 | 12 | 50 | 69.3 | 2.10 |
| Merom..... | Sullivan..... | Thomas Holmes..... | 7 | 99 | { 4, 19, 25, 26 } | { 60 } | 70.7 | 0.58 |
| New Harmony..... | Posey..... | John Chappellsmith..... | 7, 8 | 86 | 39 | 57 | 70.5 | 2.00 |
| Hawesburg..... | Fountain..... | B. C. Williams, M. D..... | 7 | 84 | 25 | 54 | 67.0 | 4.30 |
| Averages..... | | | | | | | 69.6 | 1.99 |
| ILLINOIS. | | | | | | | | |
| Chicago..... | Cook..... | J. G. Langguth, jr..... | 7, 8 | 90 | 4 | 57 | 70.3 | 2.82 |
| Near Chicago..... | do..... | Sam'l Brookes..... | 8 | 90 | 2, 22 | 58 | 65.8 | ..... |
| Evansston..... | do..... | Prof. Oliver Marcy..... | 8, 29 | 86 | 4 | 57 | 67.0 | 3.34 |
| Marango..... | McHenry..... | J. W. James..... | 7 | 87 | 4 | 47 | 64.7 | 5.36 |
| Charleston..... | Coles..... | Charles Gramesley..... | 7, 8 | 88 | 5 | 52 | 68.2 | 0.66 |
| Mattoon..... | do..... | W. E. Henry..... | 7, 8 | 86 | 9 | 52 | 69.7 | 1.44 |
| Aurora..... | Kane..... | A. Spaulding, M. D..... | 7, 8 | 86 | 18, 19 | 54 | 66.3 | 3.63 |
| Louisville..... | Clay..... | D. H. Chase, M. D..... | 7, 8 | 92 | { 3, 4, 5, 12, 19, 20, 21, 23, 24, 30 } | { 60 } | 69.2 | 1.30 |
| Golconda..... | Pope..... | Wm. V. Eldredge..... | 10 | 95 | 22 | 50 | 72.8 | 1.60 |
| Belvidere..... | Boone..... | G. B. Moss..... | 7 | 91 | 18, 19 | 52 | 65.7 | 4.06 |
| Decatur..... | Macon..... | Timothy Dudley..... | 7 | 89 | 5 | 54 | 68.7 | 2.60 |
| Winnebago..... | Winnebago..... | E. W. and Miss Tolman..... | 7 | 86 | 12 | 51 | 65.2 | 3.92 |
| Wyanet..... | Bureau..... | J. S. and Miss I. G. PHELPS. | 7 | 89 | 19 | 47 | 67.2 | 6.69 |
| Hennepin..... | Putnam..... | Ethan Osburn..... | 7 | 89 | 12, 19 | 54 | 68.3 | 3.10 |
| Peoria..... | Peoria..... | Fred'k Brendel..... | 7 | 91 | 19 | 56 | 70.3 | 3.56 |
| Havana..... | Mason..... | Jos. Cochran..... | 7 | 90 | 19 | 53 | 67.0 | 3.36 |
| Dubois..... | Washington..... | Wm. C. Spencer..... | 7 | 92 | 29 | 58 | 72.3 | 2.32 |
| Galesburg..... | Knox..... | Prof. Wm. Livingston..... | 7 | 84 | 19 | 56 | 66.7 | 3.96 |
| Manchester..... | Scott..... | Dr. J. and C. W. Grant..... | 21, 22 | 90 | 4 | 56 | 69.8 | 2.61 |
| Mt. Sterling..... | Brown..... | Rev. A. Duncan..... | 8 | 83 | 4, 19 | 58 | 69.1 | 4.37 |
| Andalusia..... | Rock Island..... | Dr. E. H. Bowman..... | 7 | 84 | 19 | 50 | 68.1 | ..... |
| Angusta..... | Hancock..... | S. B. Mead, M. D..... | 7 | 85 | 19, 25 | 54 | 67.8 | 5.78 |
| Warsaw..... | do..... | B. Whitaker..... | 6, 7 | 90 | 19 | 55 | 67.9 | 4.12 |
| Averages..... | | | | | | | 68.2 | 3.35 |
| WISCONSIN. | | | | | | | | |
| Sturgeon Bay..... | Dove..... | Rufus M. Wright..... | 7 | 86 | { 2, 3, 11, 17, 18, 26 } | { 51 } | 64.0 | 3.95 |
| Manitowoc..... | Manitowoc..... | Jacob Lips..... | 8 | 81 | 20 | 50 | 63.3 | 3.13 |
| Milwaukee..... | Milwaukee..... | I. A. Lapham, LL.D..... | 7 | 87 | 5 | 47 | 64.1 | 2.10 |
| Geneva..... | Walworth..... | W. H. Whiting..... | 7 | 92 | 5 | 51 | 65.1 | 3.11 |
| Waupacca..... | Wanpacca..... | H. C. Mead..... | 7 | 88 | { 12, 13, 19, 20 } | { 50 } | 63.4 | ..... |
| Embarrass..... | do..... | E. Everett Breed..... | 7 | 81 | 12 | 46 | 61.8 | 3.35 |
| Rocky Run..... | Columbia..... | W. W. Curtis..... | 7 | 84 | 12 | 50 | 64.7 | 2.50 |
| Madison..... | Dane..... | W. W. Daniels..... | 7 | 83 | 5 | 54 | 61.2 | 4.00 |
| Edgerton..... | Rock..... | H. J. Shints..... | 7 | 88 | 4, 19 | 59 | 67.7 | 7.10 |
| Mosinee..... | Marathon..... | Jno. O'Donoghue..... | 11 | 79 | 4 | 43 | 60.1 | 10.20 |
| Baraboo..... | Sauk..... | M. C. Waite..... | 7 | 88 | 20 | 49 | 64.2 | 1.69 |

Table showing the highest and the lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum temperature. | Date. | Minimum temperature. | Mean temperature. | Rain-fall. |
|----------------------------|-------------------|-----------------------------|------------------------------|----------------------|-----------------------------|----------------------|-------------------|------------|
| WISCONSIN—Cont'd. | | | | | | | | |
| Tunnel City | Monroe | Rev. Geo. Pegler | 29 | 92 | 11, 28 | 48 | 64.3 | 2.29 |
| Bayfield | Bayfield | Andrew Tate | 9 | 78 | 1 | 48 | 61.9 | |
| Averages | | | | | | | 63.5 | 3.86 |
| MINNESOTA. | | | | | | | | |
| Minneapolis | Hennepin | Wm. Cheney | 21 | 82 | { 2, 23, 25, 26, 30 } | 50 | 63.5 | 4.07 |
| Sibley | Sibley | C.W. & C.E. Woodbury | 15, 21 | 80 | 2 | 43 | 64.1 | 1.55 |
| Koniska | McLeod | Thomas Young | { 10, 12, 19, 21, 29 } | 76 | 20 | 46 | 60.2 | 2.50 |
| Litchfield | Meeker | H. L. Wadsworth | 10 | 82 | 26, 29, 30 | 50 | 63.8 | 5.00 |
| New Ulm | Brown | Charles Roos | 15 | 81 | 25 | 46 | 65.8 | 2.01 |
| Madelia | Watonwan | W. W. Murphy | 15, 27 | 85 | 24, 25 | 50 | 67.0 | 4.15 |
| Averages | | | | | | | 64.1 | 3.21 |
| IOWA. | | | | | | | | |
| Clinton | Clinton | Dr. J. P. Farnsworth | 7 | 85 | 4 | 56 | 67.9 | 2.65 |
| Dubuque | Dubuque | Asa Horr, M. D. | 7 | 88 | 19 | 51 | 65.9 | 3.98 |
| Monticello | Jones | Rufus P. Smith | 7 | 90 | 18 | 50 | 67.7 | 3.95 |
| Bowen's Prairie | do | Sam'l Woodworth | 6, 7 | 82 | 11 | 54 | 65.2 | 2.33 |
| Ft. Madison | Lee | Dan'l McCready | 8 | 87 | 19 | 51 | 67.4 | 4.52 |
| Guttenberg | Clayton | Jas. P. Dickerson | 7 | 87 | 19 | 49 | 64.6 | |
| Mt. Vernon | Linn | Prof. A. Collins | 7 | 83 | 11 | 52 | 64.9 | |
| Iowa City | Johnson | Prof. Theo. S. Parvin | 7 | 90 | { 4, 5, 9, 18 } | 56 | 67.8 | 6.67 |
| Independence | Buchanan | Geo. Warne, M. D. | 7 | 88 | 19 | 54 | 65.9 | 5.65 |
| Near Independence | do | Mrs. D. B. Wheaton | 7 | 86 | 12, 19 | 57 | 66.1 | 5.26 |
| Rockford | Floyd | H. Wadey | 7 | 82 | 4 | 52 | 63.7 | |
| Iowa Falls | Hardin | N. Townsend | 7 | 84 | 1, 2 | 56 | 69.2 | 9.33 |
| Algona | Kossuth | James H. Warren | 6, 15 | 84 | 2 | 50 | 63.0 | |
| Webster City | Hamilton | Clayton I. Croft | 10 | 90 | 28 | 47 | 64.0 | 8.04 |
| Boonesboro | Boone | E. Babcock | 6 | 84 | 2 | 47 | 63.6 | 12.08 |
| Fontanelle | Adair | A. F. Bryant | 5 | 87 | 2 | 51 | 65.4 | 11.75 |
| Grant City | Sac | Mr. and Mrs. Miller | 6, 7 | 86 | 2 | 48 | 65.3 | 7.11 |
| Sac City | do | D. B. Nelson | 20 | 84 | 24 | 52 | 63.5 | 4.60 |
| Logan | Harrison | Jacob T. Stern | 6 | 84 | 2, 4 | 48 | 62.2 | 0.90 |
| Woodbine | do | David R. Witter | | | | | | 7.00 |
| West Union | Fayette | Frank McClintock | 30 | 87 | 13, 19 | 54 | 66.9 | 5.16 |
| Averages | | | | | | | 65.5 | 6.47 |
| MISSOURI. | | | | | | | | |
| St. Louis University | St. Louis | Rev. F. H. Stumpebeck | 6, 7 | 89 | 25, 30 | 58 | 71.8 | 1.08 |
| Allenton | do | A. Fendler, M. D. | 7 | 97 | 25 | 52 | 68.8 | 0.99 |
| Hematite | Jefferson | Jno. M. Smith | 7 | 94 | 25 | 52 | 71.2 | 1.37 |
| Hannibal | Marion | Frank J. Hearn | 6, 7 | 88 | 25 | 54 | 68.6 | 7.30 |
| Rolla | Phelps | Homer Kuggles | 6 | 91 | 25 | 53 | 70.3 | 2.33 |
| Jefferson City | Cole | Nicolas de Wyl | 1 | 91 | 25 | 52 | | |
| Kansas City | Jackson | Sam'l W. Salisbury | 6 | 84 | 4 | 55 | 68.2 | 3.25 |
| Harrisonville | Cass | John Christian | 6 | 88 | 27, 28 | 54 | 68.2 | 4.11 |
| Oregon | Holt | Wm. Kaucher | 6 | 91 | 4 | 54 | 67.9 | 4.20 |
| Corning | do | Horace Martin | 7 | 88 | 24, 30 | 51 | 68.1 | 4.73 |
| Averages | | | | | | | 69.2 | 3.25 |
| KANSAS. | | | | | | | | |
| Atchison | Atchison | Dr. H. B. & Miss Horn | 6 | 88 | 4 | 56 | 68.3 | 4.20 |
| Williamstown | Jefferson | John M. Cotton | 6 | 90 | 4, 23 | 54 | 69.0 | 4.09 |
| Leavenworth | Leavenworth | Dr. J. Stayman | 7 | 88 | 24, 27 | 52 | 67.6 | 4.66 |
| Poala | Miami | L. D. Walrad | 6 | 89 | 27 | 52 | 68.4 | 2.69 |
| Baxter Springs | Cherokee | Ingraham & Hilland | 6 | 92 | 24, 30 | 60 | 74.4 | 4.70 |
| Lawrence | Douglas | Prof. F. H. Snow | 6 | 89 | 24, 25, 28 | 55 | 67.9 | 2.82 |
| Holton | Jackson | James Watters, M. D. | 6, 7 | 92 | 25 | 51 | 67.8 | 5.00 |
| State Agr. College | Riley | Prof. B. F. Mudge | 6 | 92 | 24 | 52 | 68.3 | 4.57 |
| Council Grove | Morris | A. Woodworth, M. D. | 6 | 90 | 23, 24 | 54 | 69.4 | 7.50 |

STATE AVERAGES FOR SEPTEMBER, 1870.

Table of the maximum and minimum temperatures (with dates prefixed) in the several States, &c., named, with the average mean temperature and rain-fall in each, for the month of September, 1870.

| States. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Average mean temperature. | Average rain- fall. |
|----------------------------|------------------|---------------------------|------------------------|---------------------------|------------------------------|------------------------|
| | | ° | | ° | ° | In. |
| Maine | 1, 15 | 85 | 13 | 36 | 60.9 | 1.88 |
| New Hampshire | 1, 2 | 90 | 27, 29 | 34 | 59.7 | 1.20 |
| Vermont | 1 | 88 | 12 | 30 | 59.9 | 3.05 |
| Massachusetts | 1 | 93 | 12 | 39 | 63.0 | 1.78 |
| Connecticut | 2, 23 | 90 | 12 | 41 | 64.4 | 1.84 |
| New York | 1 | 93 | 13 | 34 | 63.3 | 3.25 |
| New Jersey | 1, 3 | 90 | 13 | 42 | 66.6 | 2.33 |
| Pennsylvania | 8 | 91 | 20 | 31 | 65.6 | 2.73 |
| Maryland | 14 | 93 | 12 | 49 | 67.9 | 4.08 |
| District of Columbia | 2 | 83 | 14 | 51 | 68.8 | 1.78 |
| Virginia | { 3, 4, 25, 26 } | { 91 } | 20, 21 | 45 | 68.6 | 5.86 |
| North Carolina | 26 | 96 | 21, 22 | 48 | 68.9 | 2.28 |
| Georgia | 4 | 92 | 20, 22, 24 | 62 | 73.8 | 3.63 |
| Alabama | 5, 6, 26 | 90 | 30 | 60 | 75.4 | 3.03 |
| Florida | 3, 5, 19 | 96 | { 19, 20, 21, 22, 23 } | 68 | 78.7 | 7.97 |
| Texas | 22 | 98 | 30 | 62 | 79.9 | 1.62 |
| Mississippi | 6 | 94 | 24 | 58 | 73.3 | 3.10 |
| Tennessee | 7 | 94 | 20, 21, 22 | 52 | 70.3 | 2.31 |
| Kentucky | 7 | 92 | 5, 20, 21 | 51 | 71.2 | 3.21 |
| Ohio | 8 | 96 | { 13, 19, 21, 22 } | 46 | 68.7 | 2.00 |
| Michigan | 6, 7 | 100 | 20 | 41 | 64.8 | 2.44 |
| Indiana | 7 | 99 | 12, 21 | 50 | 69.6 | 1.99 |
| Illinois | 10 | 95 | 4, 19 | 47 | 68.2 | 3.36 |
| Wisconsin | 7, 29 | 92 | 4 | 43 | 63.5 | 3.86 |
| Minnesota | 15, 27 | 85 | 2 | 43 | 64.1 | 3.21 |
| Iowa | 7, 10 | 90 | 2, 28 | 47 | 65.5 | 6.47 |
| Missouri | 7 | 97 | 25 | 52 | 69.2 | 3.26 |
| Kansas | 6, 7 | 92 | 25 | 51 | 68.9 | 4.42 |
| Nebraska | 6 | 92 | 24 | 43 | 65.2 | 7.29 |
| California | 21, 22 | 96 | 19 | 48 | 67.5 | 0.07 |

NOTES OF THE WEATHER—SEPTEMBER, 1870.

N. B.—Want of room compels the omission of many notices of the auroral displays during the month. We give a few to show the varied grandeur and beauty exhibited (where not too cloudy) all over the Northern States, and, on the 24th and 25th, all over the Union.

Houlton, Me.—Violent rain 8th, with wind 4th; brilliant pink aurora 18th; heavy frost 21st.

Orono, Me.—Frosts on lowlands 12th, and uplands 13th; brilliant auroras 25th, 26th.

West Waterville, Me.—First frosts, slight, 12th, 13th; springs nearly all dry.

Gardiner, Me.—Auroras 20th, 22d, bright 18th, brilliant 25th, 26th. September, like August, warm and dry; mean heat 1.77° above average of thirty-four Septembers.

Lisbon, Me.—River lower than since 1819—an old settler says 1816.

Norway, Me.—Severe frosts 12th, 13th; auroras 22d, 25th, 26th, green and white rays 23d, red and white 24th. Driest time ever known here.

Cornish, Me.—Auroras 18th, all night 24th, 25th, and 26th, brilliant 20th. Average September heat for 40 years, 56.16° ; in 1834, 64° ; this, 63.37° .

Whitefield, N. H.—Frosts 7th, 11th, severe 12th. Great drought to 30th.

Tamworth, N. H.—Frost, ice, 13th; auroras 18th, 20th, 25th, 26th; the sky a tent of brilliant flames and streamers uniting overhead, 24th.

Lunenburg, Vt.—Aurora every fair evening; very bright 24th, 25th. Month dry, but vegetation yet green.

North Craftsbury, Vt.—First killing frost 12th. A warm, dry September.

Woodstock, Vt.—Slight frosts 6th, 12th, 13th; auroras 24th, 25th, 28th. Rains have not yet swelled the low springs and streams.

West Charlotte, Vt.—Auroras 6th, 19th, 21st, 26th; brilliant white and rose columns and streamers 25th; first copious rain since April 30th.

Panton, Vt.—Auroras 6th, 7th, 8th, 11th, 22d, 26th; brilliant 18th, and with red streamers 21st; first frost 12th.

Topsfield, Mass.—Frosts 7th, 11th, 12th, 20th; brilliant aurora 25th.

North Billerica, Mass.—Wells and streams never lower; heavy rain 30th.

Mendon, Mass.—Rain, ended severest drought in forty-four years, 30th.

Williamstown, Mass.—Slight frosts 11th, 20th; brilliant aurora 24th.

Middletown, Conn.—Frost 12th; auroras (cloudy) 24th and 25th; brilliant 26th.

Southington, Conn.—Frosts 12th, 13th; auroras 18th, bright a. m. 27th. Dry June, July, and August; in 1854, 25.46 inches rain; 1855, 17.81 inches; 1864, 16.69 inches; 1865, 21.72 inches; this year 15.18 inches.

Brookfield, Conn.—Frosts, slight 12th, light 13th; splendid aurora, 24th.

Moriches, N. Y.—First frosts, slight, 12th, 13th; auroras, brilliant, with streamers 18th, 20th, and 25th, diffused 26th and 28th.

Caldicell, N. Y.—First frost, light 12th. Lake George lower than ever known.

New York City.—Auroras 20th, very bright 23d, 24th, 25th, 26th, 27th.

Brooklyn, N. Y.—Blessed rain 30th. Stars visible 22 nights this month.

Cooperstown, N. Y.—Slight frosts 12th, 13th, 20th. Surface rains, springs low.

North Hammond, N. Y.—Bright auroras 17th, 25th. No sharp frosts.
Houseville, N. Y.—First frosts, slight, 12th, 13th; auroras, brilliant streamers, 18th, 20th, 25th, diffused 26th, 28th.

Utica, N. Y.—Slight frosts 11th, 12th, 13th; auroras 17th, 19th, 20th, 26th; beautiful 18th, (cloudy) 24th, magnificent columns 25th.

South Trenton, N. Y.—Frosts 11th, 12th; beautiful month for farmers.

Cazenovia, N. Y.—Frosts 11th, 12th, 13th, 19th, 20th; bright auroras 25th.

Waterbury, N. Y.—Many spots seen on sun with naked eye about the 25th.

Nichols, N. Y.—Greatest rain in three months; 30th, river lower than ever.

Newark Valley, N. Y.—Dry month, streams and wells failing.

Buffalo, N. Y.—Isabella grape ripe eighty-five days from blossom, 12th. Month 2.5° warmer than its average for twelve years.

Newark, N. J.—Brilliant aurora 24th. Month pleasant, dry, and 1.36° warmer than the average of twenty-seven Septembers. In 1846 the mean was 68.64° .

Greenwich, N. J.—Cutting up corn 7th. First good rain in five weeks, 17th.

New Germantown, N. J.—Frost seen 12th. Welcome rain 30th.

Nyces, Pa.—Ground baked, cannot be plowed; nine out of ten wells dry.

Dyberry, Pa.—Frosts 11th, 12th, 13th. Delaware and Hudson Canals too low for boating since 12th. Past three months hot, dry and clear.

Horsham, Pa.—First frost, slight, 12th. Dry month to 30th.

Plymouth Meeting, Pa.—First frost, (ice in low grounds,) 12th, slight, 13th, 20th. Driest and warmest September in six years.

Factoryville, Pa.—Frosts, slight 11th, sharper 12th, 13th, 20th.

Westchester, Pa.—Auroras 26th, beautiful crimson, reaching southeast horizon and far south of zenith; all night 24th; another all night 25th.

Tamaqua, Pa.—Slight rains 17th, 18th; dry and hot till 29th.

Ephrata, Pa.—Frost on low grounds 11th, 12th, 13th; auroras 20th, 23d, to 27th.

Carlisle, Pa.—Cutting corn, sowing wheat, 7th; dust deep 28th.

Tioga, Pa.—Beautiful month, no frost; rather dry uplands.

Grampian Hills, Pa.—Seeding 4th; frosts slight 12th, 13th; bit vines 20th.

Brownsville, Pa.—Month dry till 27th; fine for farmers.

Woodlawn, Md.—Frost on low grounds 12th; auroras 18th, 23d to 27th.

Fallston, Md.—Brilliant aurora, nearly a dome of light, pinkish red, 24th. Very dry till 27th; streams, springs, &c., very low.

Mount Saint Mary's, Md.—No rain from 4th to shower on 18th; heavy rain (5.4 inches) 29th, 30th; beautiful aurora 24th.

Johnsontown, Va.—Rains few and slight since July 8th; the third drought in succession.

Hampton, Va.—Drought till 17th; frequent meteors 25th, 26th.

Surry, Va.—Bright aurora 24th; heavy rain 30th. No frost yet.

Vienna, Va.—First frost 12th.—B. Auroras, red rays 24th, brilliant white and red 25th.—W.

Piedmont, Va.—Heavy rain, 6.2 inches, 28th, 29th, 30th. Shenandoah higher than in fifty years; great loss of life and property.—M. Greatest rain known here; two families drowned; river 15 feet above highest

mark.—W. (At Harper's Ferry many houses swept away, and forty-three lives lost.)

Lynchburg, Va.—Great freshet; 8.5 inches fell on 28th, 29th, 30th.

Wytherille, Va.—First frost 21st. A very dry month till 28th.

Markham Station, Va.—Beautiful aurora, many-colored, changing, ending in festoons of rosy light, northwest and northeast, 24th.

Goldsboro, N. C.—Bright aurora till midnight, part time very red, 24th.

Albemarle, N. C.—Bright aurora, red and white, from east to west and to zenith, no arch nor corona, 24th; long drought ended by mist 30th; river rising.

Gowdeysville, S. C.—Cotton picking 8th; aurora nearly all night 24th; summer and this month of very uniform temperature.

Penfield, Ga.—Auroras, arch of light at 2 a. m., 24th; greenish white arch at 8 p. m. 24th; red sky at 11 p. m., then seven orange streamers extending 20° above the pole-star, passed away to the northwest. The arch continued till 2 a. m. 25th—a magnificent display.

Carloville, Ala.—Aurora 24th, and till daylight 25th.

Fish River, Ala.—Fine aurora 9 to 10 p. m. 24th; three beams met in zenith, changing from white to red; another a. m. 25th.

Jacksonville, Fla.—Rain two inches above September average. Brilliant aurora seen in various places in this State on 24th.

Pilatka, Fla.—Equinoctial storm, without high wind.

Clarksville, Tex.—Singular aurora at 8.30 to 10 p. m. 24th, and 12.30 to 1.45 a. m. 25th, from north-northeast to north-northwest, rising 40°, bright yellow, paling toward the zenith. No change in the barometer before or after.

New Orleans, La.—Cutting third crop of hay 14th.

Shreveport, La.—Beautiful aurora 9 to 9.30 p. m. 24th.

Brookhaven, Miss.—Month very dry; swallows, &c., have left us.

Helena, Ark.—Brilliant and beautiful aurora 24th.

Lookout Mountain, Tenn.—Remarkable aurora, red, white, yellow, green, blue, 24th; auroral glow a. m. 25th.

Clearmont, Tenn.—Red and white aurora, reaching to zenith, 24th.

Austin, Tenn.—Bright aurora 17th, continued till 18th, and extended over more than half the horizon.

Pine Grove, Ky.—Bright aurora a. m., red streamers p. m., 24th, and still visible p. m. 25th.

Shelbyville, Ky.—Auroras 20th, 24th, 25th. An agreeable month.

Wooster, Ohio.—Auroras 18th, 20th, 23d, 24th, 25th, 26th.

Adams's Mills, Ohio.—Auroras 24th, 25th, 26th, and one promising great beauty and extent, but obscured by clouds, 30th.

Westerville, Ohio.—Fine aurora, streamers, bands, and patches, covered nearly the whole sky 24th. The night was cloudy.

Urbana, Ohio.—Temperature of the month 4° above average of eighteen years.

Cincinnati, Ohio.—Magnificent aurora, gorgeous colors—white, red, pink, bordering on lilac—streamers flashing to zenith, 24th.

Ann Arbor, Mich.—Grass drying up, wheat germinating poorly.

Alpena, Mich.—Auroras 3d, 4th, 12th, 16th, bright 17th, 26th, very bright 18th, 24th, 25th. No frost yet on the island.

Litchfield, Mich.—Slight frosts 12th, 13th, 14th; auroras 26th, 27th, brilliant red, white and blue streamers from all points centered south of zenith, 24th.

Northport, Mich.—Month very pleasant; began wet and warm.

Copper Falls, Mich.—Auroras frequent, on 25th brilliant, with many streamers to zenith; on 26th with floating white clouds beyond zenith.

Ontonagon, Mich.—Brilliant aurora 25th, red and white rays streamed from bright arch to zenith. No frost since April.

Veray, Ind.—The Ohio very low, delaying travel and mails.

Knightstown, Ind.—Ground plowed last spring not yet settled by rains.

La Porte, Ind.—Grand aurora 24th, red light west and east, rosy spot at zenith emitted white and green rays in all directions, and waves of light flashed over large bands in the north.

Chicago, Ill.—Splendid aurora 24th to 25th, streamers bright red, and once the whole sky was a bright haze.

Marengo, Ill.—Auroras, bright 3d and 25th, brilliant 24th, streamers playing with great velocity, corona south of zenith, rays east and northwest, deep crimson, and one in east green.

Aurora, Ill.—Fine September, maples changing color.

Golconda, Ill.—Very pleasant month, some fogs but no frost.

Belvidere, Ill.—Aurora 24th, grand display, bright as moonlight, red and yellow streamers, luminous over three-fourths of the sky. No frost since April 29th; month unusually warm.

Wyanet, Ill.—Aurora 24th to 25th, illumined the whole heavens through the clouds, equal to the light of a full moon.

Sturgeon Bay, Wis.—Tornado with rain from south, followed by wind from southeast, with large hail, 7th; auroras 24th, 25th.

Manitowoc, Wis.—Auroras, beams to zenith 3d, arch 20th and 25th, with beams 17th, 18th, and 26th, with beams from east to west through zenith, and corona southeast of zenith, from which streamed white and purple rays in all directions, the whole sky in motion like sheet-lightning, 24th and a. m. 25th.

Genera, Wis.—Aurora 24th, the greater part of the sky lighted with bright undulating waves of electricity. No dark bank or spots.

Rocky Run, Wis.—Auroras 4th, with smoky base, electric flashes to zenith, and electric clouds 15° south of zenith. On 24th to 25th, misty light, flashing to zenith, diffuse 18th, 20th, 28th and 30th.

Mosinee, Wis.—Wet last and this month; potatoes rotting in ground.

Baraboo, Wis.—Birds singing, and vegetation green.

Minneapolis, Minn.—Only one September in fifteen years as warm.

Sibley, Minn.—Splendid auroras all night 24th, 25th; could read by the red flashes, which seemed to move horizontally only twenty feet from the ground.

Koniska, Minn.—Slight frost 26th; vines unhurt; leaves not falling.

New Ulm, Minn.—Auroras, streamers, 3d, 18th; magnificent 24th to 25th; the entire horizon a waving fire; streamers from all sides formed a splendid corona in zenith; they became red after midnight, and floated southeast as before a wind, to be renewed by fresh electric flashes from the sides.

Clinton, Iowa.—Warmth very uniform; no frost; vegetation green.

Bowen's Prairie, Iowa.—A lovely month; no frost; springs very low.

Guttenberg, Iowa.—Pleasantest September in twenty-one years.

Boonesboro, Iowa.—Aurora, 24th, with arch, and red, white, blue, and yellow lights flickering upward rapidly. At 9.30 spread to 45° south, and formed corona 20° south of zenith, forming a vast tent of white, illumined by colors, red predominating. After midnight arch formed again, with scalloped upper edge, emitting flaming spires of red, blue, violet, and yellow, while cirrus clouds of white light danced to and fro like lightning.

Logan, Iowa.—More rain than in any month in eleven years.

Hematite, Mo.—Auroras, arch, corona, and white, yellow, green, and

crimson lights, 22d, 24th; both east shadows. Another, but cloudy night, 26th. Month dry; plowing difficult.

Oregon, Mo.—Extreme damp is sprouting grain in stacks.

Corning, Mo.—Singular brilliant aurora 24th; double arch, with intensely dark bank, but stars seen through it; streamers from lower arch flashing in front of the upper and its streamers.

Atchison, Kans.—Month warm and foggy; no frost in September.

Williamstown, Kans.—Cutting corn 8th; slight meteoric shower 14th. Wettest September known here—stacks spoiling.

Baxter Springs, Kans.—Damp, no entirely clear day; month 2.27° warmer than last September.

Lawrence, Kans.—Cloudiest and foggiest month on record.

Council Grove, Kans.—Terrific thunder-storms very common to 23d.

Omaha Agency, Nebr.—Continuous rain three days, ending 23d; aurora, at times covering nearly the whole sky with red flashes of light and forming a fiery red corona, 24th.

Bellevue, Nebr.—Month very cloudy, 3° warmer than in 1869.

Nebraska City, Nebr.—Double-arch aurora 24th, corona 20° south of zenith, red glow in rapid flashes northeast and northwest. Month very damp.

New Castle, Nebr.—Heavy rains, with thunder and high winds, 5th, 6th, 7th, 25th, and 26th.

Coalville, Utah.—Heavy gales 3d, 9th; heavy frosts 16th, 17th; beautiful aurora, rosy glow and colored streamers, 24th.

Monterey, Cal.—Earthquake, 3 a. m. 2d; aurora, 23d, north-northeast, flame red 30° toward zenith, traversed by brighter and lighter-colored streamers moving slowly from east to west just above the horizon.

Chico, Cal.—Splendid aurora 24th, said to be only the fourth seen in California since 1849.

Deer Lodge City, Mont.—Severe frosts 16th, 22d, 23d; auroras 23d, pale white 25th, 26th, magnificent 24th—it covered two-thirds of the sky with brilliant red bands and flashes, and lasted all night.

Denver, Colo.—Rain for thirty-two hours to 22d; mountains covered with snow, killing frost 24th; aurora 24th, northeast, like daybreak on the horizon, pink-illuminated clouds at zenith, and long rays of light from horizon to zenith.

Cathlamet, Wash.—No heavy rains nor equinoctial storm.

Eola, Oreg.—Brilliant aurora 24th, of changing brilliancy, moved from north to northeast, then to northwest, and again to northeast.

Astoria, Oreg.—A brilliant aurora 24th.

MONTHLY REPORT

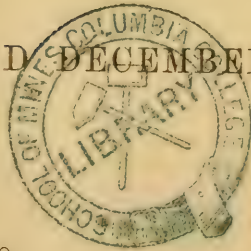
OF THE

DEPARTMENT OF AGRICULTURE

Reports

FOR

NOVEMBER AND DECEMBER,



1870.

WASHINGTON.

GOVERNMENT PRINTING OFFICE.

1870.

MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE.

Statistical Division, December 16, 1870.

SIR: I herewith report for publication statistics of comparative production and condition of certain farm crops, from returns of November and December, with extracts from letters of regular and special correspondents, and articles upon the following topics: Southern Agriculture, Experiments with Department Seeds, Premium Corn Crop in Pennsylvania, American Dairyman's Association, Valley of the Rio Grande, Rainy Season in California, Stock Sales, Immigration, Market Prices of Farm Products, Sugar Beet in Europe, Wide Drilling and Tilling of Wheat, Hop Growing in England, Meteorology, &c.

J. R. DODGE,
Statistician.

Hon. HORACE CAPRON,
Commissioner.

CONDITION OF THE CROPS.

Corn.—The estimates of the corn product for the past years have rarely indicated a very near approach to a full crop. The crop of 1859 (as reported by the census) was 838,000,000 of bushels. The increase of population (about 25 per cent.) would require in 1869 an increase of more than 200,000,000 to keep up the same ratio of production. The estimate of 1869 was only 884,000,000, showing an increase in ten years of only 46,000,000, or 5 per cent., to counterbalance an advance in population of 25 per cent. That of 1868 was little larger, and less by a hundred millions than a full crop of maize. The present is undoubtedly, in proportion to population, and probably in proportion to acreage, the largest crop since that recorded by the census. From a preliminary calculation, upon local returns from 749 counties, the total product of this year is made to exceed 1,100,000,000. This would give about 28 bushels per acre this year, upon the assumed acreage, (39,000,000 acres) against 23½ bushels upon a little more than 37,000,000 acres last year.

The greatest relative increase appears in Illinois, where the crop of 1869 was very short, amounting to 65 per cent. in aggregate bushels; Indiana is placed next, at 55 per cent.; Michigan, 35; Wisconsin, 33; Ohio, 30; Minnesota, 23; Kentucky, 23; Iowa, 19; New York, 18. Some of the southern States have made a large relative advance; Tennessee, 32; South Carolina, 27 per cent.; Georgia, 22; Louisiana, 20; Alabama, 17; Mississippi, Texas, and other cotton States have made a small increase. The States producing less than last year are, Connecticut, 15 per cent.; Rhode Island, 14; Massachusetts, 10; California, 10; New Hampshire, 5; Kansas, 2. Of 749 counties reported, 535 report a total product above an average; and 117 represent the local crop at less than

an average. The following table will show the number and relative character of those returns:

| States. | No. of counties report- ing. | Above aver- age. | Average. | Below aver- age. | States. | No. of counties report- ing. | Above aver- age. | Average. | Below aver- age. |
|---------------------|---------------------------------|---------------------|----------|---------------------|--------------------|---------------------------------|---------------------|----------|---------------------|
| Maine..... | 9 | 7 | 1 | 1 | Louisiana..... | 9 | 7 | 2 | ..... |
| New Hampshire..... | 6 | 2 | ..... | 4 | Texas..... | 29 | 13 | 8 | 8 |
| Vermont..... | 8 | 5 | 2 | 1 | Arkansas..... | 15 | 11 | 3 | 1 |
| Massachusetts..... | 7 | 2 | ..... | 4 | Tennessee..... | 29 | 25 | 1 | 3 |
| Rhode Island..... | 3 | ..... | 2 | 1 | West Virginia..... | 13 | 12 | ..... | 1 |
| Connecticut..... | 4 | 1 | ..... | 3 | Kentucky..... | 23 | 21 | ..... | 2 |
| New York..... | 33 | 28 | 2 | 3 | Missouri..... | 49 | 35 | 7 | 7 |
| New Jersey..... | 16 | 12 | 2 | 2 | Illinois..... | 49 | 42 | 3 | 4 |
| Pennsylvania..... | 40 | 26 | 7 | 7 | Indiana..... | 37 | 35 | 1 | 1 |
| Delaware..... | 1 | 1 | ..... | ..... | Ohio..... | 40 | 34 | 5 | 1 |
| Maryland..... | 11 | 4 | 2 | 5 | Michigan..... | 33 | 30 | 3 | ..... |
| Virginia..... | 26 | 14 | 2 | 10 | Wisconsin..... | 26 | 21 | 4 | 1 |
| North Carolina..... | 40 | 31 | 4 | 5 | Minnesota..... | 15 | 11 | 1 | 3 |
| South Carolina..... | 10 | 8 | ..... | 2 | Iowa..... | 36 | 24 | 7 | 5 |
| Georgia..... | 42 | 35 | 5 | 2 | Kansas..... | 20 | 8 | 1 | 11 |
| Florida..... | 4 | 1 | 2 | 1 | Nebraska..... | 10 | 5 | 3 | 2 |
| Alabama..... | 14 | 8 | 5 | 1 | California..... | 13 | 2 | 6 | 5 |
| Mississippi..... | 23 | 11 | 4 | 8 | Oregon..... | 6 | 3 | 1 | 2 |

Of 49 counties of Illinois, 19 report an increase over last year of 50 to 100 per cent. or more, viz: Alexander, Adams, Gallatin, Grundy, Hancock, Jersey, Kendall, Lee, Logan, Marion, McHenry, Morgan, Peoria, Pike, Pope, Pulaski, Schuyler, Washington, Williamson. In many of the counties last year's crop was a comparatively small one.

The drought was of longer continuance in New England than elsewhere, and was more serious in its effects, scorching the plant upon the sandy soils of Southern New Hampshire, Eastern Massachusetts, Rhode Island, and Connecticut. In Maine, Northern New Hampshire, and Vermont, the crop matured remarkably well, the unusual heat being just sufficient to develop the plant and perfect the ear. Some soils in New York proved too light for a summer of high temperature, but the strong lands and the peaty soils of the more northern counties reaped great advantage from continued heat.

From New York down the coast to South Carolina, there was much injury from dry weather, yet the average was large, and the soils of good quality and fair culture gave fine yields, making more than the usual return in the aggregate. The southern counties of Maryland were among the most seriously parched in this region. A few counties in the Mississippi Valley make record of a short crop from drought, and in some cases report inferior quality, the grain "light, chaffy, and loose on the cob," as in Vernon County, Missouri. Short ears of fair quality resulted from the drought in other soils, and an earlier maturity is frequently noted. In Warren County, New Jersey, corn was "husked and cribbed" in September.

Wet weather in the spring wrought quite as much injury as the later drought in the eastern counties of Virginia and North Carolina, especially in the counties of Caldwell, Currituck, and Rockingham, in North Carolina. Wet weather was injurious in some counties of Tennessee and Missouri.

Some complaint is made of the rotting of the corn after coming to maturity in North Carolina, Alabama, Texas, Arkansas, and Kentucky.

In some sections, where rain was abundant in spring and drainage imperfect, the late planted corn, if deeply plowed and well cultivated,

matured best. This was the case in the West, and even on the southern Atlantic coast; yet the dry uplands of the South and Southwest matured better the earlier planting.

Insects appeared as hindrances to full success in isolated fields. In Currituck County, North Carolina, the "shatter worm," (in local parlance,) probably the larva of one of the species of *Sphenophorus*, working in the stalk, caused some damage. Worms in the ear, presumed to be *Heliothis armigera*, have been troublesome in Cowley County, Kansas. The corn weevil, *Sitophilus oryzae*, is reported in Caswell, North Carolina, and Austin, Texas. The chinch bug, *Micropus leucopterus*, has been injurious in Macon County, Illinois, and Nemaha, Kansas.

The local yield is relatively very large in many of the returns. The crop is declared "the best since 1862" in Saratoga County, New York; "the best in thirty years" in Indiana County, Pennsylvania; "150 per cent. better than last year" in Buckingham County, Virginia; "the best in ten years" in Granville, North Carolina; "the largest since the war" in Spartansburg, South Carolina; "fifty per cent. above an average" in Randolph, Alabama; a similar increase in other counties of Alabama, and in parishes of Louisiana; "the heaviest crop for years" in Marion, Texas; "the largest in fifteen years" in Butler, Kentucky; "the best ever raised" in Warren, Kentucky; "never better in quality" in Williams, Ohio; "some fields 150 bushels of ears per acre" in Montcalm, Michigan.

This analysis of returns, exhibit of their averages, and presentation of their worst as well as their best features, will give a fair interpretation of the aggregate judgment of reliable farmers, each reporting only his own county, without undertaking to guess for the whole State or section.

Cotton.—A combination of the elements of acreage and condition in the October report, without allowing for possible drawbacks from weather, pointed to a "crop exceeding three and a half million of bales." None of the contingencies so liable to reduce production have occurred since that date to vitiate a favorable comparison with the remarkably favorable season of 1869; and as the early summer was more propitious than that of last year, the November returns indicate eighteen per cent. advance in quantity upon an acreage increased by twelve per cent. The total aggregate result, as figured from returns to December 1st, makes an estimate of 3,800,000 commercial bales, 1,767,000,000 pounds, or eighty-two per cent. of the crop of 1859, which was 2,154,820,800 pounds.

The following statement presents the estimate in detail, including the percentage of increase over the previous crop, and the yield per acre, with the number of acres cultivated in each State.

| States. | No. of acres. | No. of bales. | Product compared with 1869, (per cent.) | Yield per acre. |
|---------------------|---------------|---------------|---|-----------------|
| North Carolina..... | 451, 714 | 170, 000 | 118 | 175 |
| South Carolina..... | 601, 764 | 220, 000 | 124 | 170 |
| Georgia..... | 1, 330, 491 | 495, 000 | 122 | 173 |
| Florida..... | 140, 909 | 50, 000 | 126 | 165 |
| Alabama..... | 1, 437, 272 | 510, 000 | 112 | 165 |
| Mississippi..... | 1, 644, 512 | 725, 000 | 110 | 205 |
| Louisiana..... | 920, 700 | 495, 000 | 115 | 250 |
| Texas..... | 900, 937 | 465, 000 | 132 | 240 |
| Arkansas..... | 711, 734 | 375, 000 | 124 | 245 |
| Tennessee..... | 526, 184 | 215, 000 | 114 | 190 |
| Other States..... | 218, 823 | 80, 000 | ..... | 170 |

The top crop has matured well, producing less short and discolored fiber than usual. The report of Taylor County, Georgia, claims a more favorable autumn for maturing and gathering than for twenty years, and a crop larger by a third than was promised late in September. Counties in Alabama, rated short on the 1st of October, will secure a full average. Many of the returns, made early in November, claimed entire exemption from frosts to date. The influence of mild and pleasant weather in Tennessee upon the maturing of later bolls is especially marked, and perhaps in a still higher degree in Missouri.

Large yields are occasionally reported, as in Crawford County, Texas, where 3,000 pounds of seed cotton per acre have been grown upon limited areas. In Uvalde County, in the same State, 800 pounds are assumed to be the average for the first year of cotton culture there. In some portions of North Carolina, as in Stokes County, good farmers are realizing a bale per acre, and in many counties a better yield is secured than in 1859. Several counties in other States report the largest crop ever grown.

On the contrary, there are counties in which a reduction appears, as in Bertie, North Carolina, where the crop "is scarcely larger than last year with twice the acreage."

It is mentioned, as a noticeable fact, that the advantages of favorable weather were in many places rendered nugatory by poor cultivation; and abundant evidence appears that watchfulness and industry, with science, will go far to obviate any disadvantages, natural or otherwise, under which the planter may labor. An illustration is afforded from Wilkinson County, Mississippi, a comparatively poor portion of the State, where our own correspondent has produced fully 500 pounds of lint per acre, on old hill lands, by means of deep, thorough culture, stable manure, and commercial fertilizers.

A general exemption from losses by insects is noted, with occasional exceptions, mostly in Louisiana and Texas. The counties of Red River, Matagorda, and Henderson, in Texas, and Rutherford County, in Tennessee, have been infested with the boll-worm.

Floods have reduced the yield in Kendall, Milam, Victoria, Fayette, Colorado, Bexar, and other counties in Texas.

Rust has been injurious in the counties of Anson and Rowan, North Carolina, and to a slight extent in Mississippi and Louisiana.

A peculiarity of the season has been the appearance of cotton blooms late in the fall, indicating an autumn unusually favorable to the vigor and continued fruitfulness of the plant. Second crops of grapes and other fruits have also been noted in the South from a similar cause.

The sea-island cotton culture has not been extended, and has been less prosperous than the upland varieties, which constitute nearly the whole bulk of our production. The sea islands are now mainly occupied by freedmen, who are not progressive, and scarcely industrious enough in the work. The cotton of Glynn County, Georgia, is grown almost exclusively by freedmen, who rent the lands, and, never manuring, the soil is exhausted and the crop a failure. A few islands of the Carolina and Georgia coast and a part of the cotton acreage of Florida, constitute our available resources in black seed cotton. Last year's crop was but 26,656 bales.

The region of Galveston Bay, in Texas, produces sea-island cotton of superior quality. A report is received of a sack of 118 pounds of lint, which was sold last season in Galveston for \$123. The yield is represented to be 200 to 300 pounds per acre.

It will of course be understood that these aggregates are estimates,

and not an actual enumeration, which would be impossible in advance, though very easy a year later in the light of recorded facts of the cotton movement. Every year have they been assailed by two parties—the producer, who deems the figures too high, and the manufacturer or trader, who is sure they are too low; and usually both have had the grace to make the amende before the cotton year expired. All preliminary estimates are made from returns of October 1, at the close of the first picking, when good or bad weather for the three succeeding months may make a difference of half a million bales in the result. To insure infallibility in an estimate at that date would require omniscience in the statistician, a qualification not yet required in civil service examinations. Yet the earliest estimates of the past four years, 1866-'69, have fallen very little short of the actual returns, and have in no instance come far from the aggregate of the receipts of the year, unless an exception be made of last year, when the peculiarly mild and stormless autumn increased the production over an average expectation fully a third of a million bales, and the estimate was advanced accordingly to three million bales. That estimate has been pronounced by the best authority an entirely proper one for the time. The following statement will show the difference between the estimate and the commercial returns, the latter including nearly enough of the old crop grown prior to 1866 to make the difference—the figures being those of the New York Shipping List, and including shipment by railroad northward as well as receipts at cotton ports, but they do not include (in the years 1866-'69) about 80,000 bales per annum used in the South:

| Year. | Preliminary estimate. | Total receipts. |
|-----------|-----------------------|-------------------|
| | <i>Bales.</i> | <i>Bales.</i> |
| 1866..... | 1, 835, 000 | 2, 031, 988 |
| 1867..... | 2, 340, 000 | 2, 430, 892 |
| 1868..... | 2, 380, 000 | 2, 260, 557 |
| 1869..... | 2, 750, 000 | 3, 114, 592 |
| | <hr/> 9, 305, 000 | <hr/> 9, 838, 029 |

It is also our aim, in a preliminary estimate, to fall a little below rather than go an ounce above the probable yield, and thus give the benefit of any doubt or contingency to the producer, while honestly aiming to bring to light the precise facts of production, however they may affect prices, planting, or manufacture. If these estimates, made upon this plan before the crop was grown, are not sufficiently accurate, they are, at least, uniformly the most complete, full, and reliable that have appeared before the crop was grown.

Sugar Cane.—The increase in cane over last year is estimated at thirty per cent. in Louisiana, a similar rate is returned for Texas, and some advance has been made in Georgia and Florida. So much cane is annually used as plant cane in extending the acreage that the product of sugar and molasses does not represent the real increase in cane growing. It is reported from West Feliciana, (Louisiana,) that the crop promised well until the middle of September, since which time want of rain has reduced the yield. In Rapides the acreage is increased by thirty per cent. In Terre Bonne fifty per cent. increase in the product was promised in November. Drought has somewhat reduced expectations in St. Mary's, as also in Leon Parish. The prospect is very favorable in Iberia Parish. Recent frosts have injured the cane to a considerable extent, and it is feared that it will sour before it can be

used. The sugar product of Louisiana in 1869 was about 87,000 hogsheads. The quantity manufactured elsewhere is small, but increasing. Cane is found very profitable in Southern Georgia for the manufacture of sirup exclusively. Its culture is rapidly extending in Texas, and seems destined to be a product of much importance there.

In the country west of Galveston Bay, where its culture has been commenced, the slightest frost had not occurred on the 11th of November, the lowest range of the thermometer being 49°.

Sorghum.—Returns indicate a larger product than that of last year. The States showing an increase are South Carolina, Georgia, Texas, Arkansas, Tennessee, and all of the Western States. Little is grown in the Atlantic States north of Virginia. It is injured by rust in Butler County, Kentucky. In Greene, Tennessee, the blades and seeds rotted badly. A complaint of deterioration by "second growth" comes from Marion County, Iowa; yet sorghum from seed planted early upon land highly manured, yielded 175 gallons of superior sirup per acre, while neighboring lots, differently treated, were not worth harvesting. Drought injured the crop in some places in the West, and prevented the harvesting of a second crop in Texas.

Tobacco.—The tobacco crop is comparatively large; the increase upon the crop of 1869 being 18 per cent. in Virginia, 22 in North Carolina, 20 in South Carolina, 23 in Georgia, 15 in Tennessee, 20 in Kentucky, 6 in Missouri, 6 in Illinois. Kentucky, Virginia, Tennessee, North Carolina, and Missouri produce the bulk of the crop, with considerable aid from Maryland, Illinois, Indiana, and Ohio. Connecticut and Massachusetts still produce largely of the seed leaf for wrappers, and the States of the Ohio Valley are beginning to find its production profitable. The estimate of the year will aggregate at least 300,000,000 pounds.

Hay.—The hay crop is less in quantity than that of 1869 by about 15 per cent. The estimate will go above 20,000,000 of tons, which is little more than the product of 1859. The crop in New England is reduced one-sixth; one-fifth in New York; a little in the Gulf States east of the Mississippi; in Missouri, 29 per cent.; in Illinois, 31; in Indiana, 19; in Ohio, 16; in Mississippi, 2 per cent. It is worthy of remark that Kansas, popularly regarded as extremely subject to drought, is credited with an increase of 8 per cent. Minnesota has also had a good crop, and the yield of the Southwest and of the Southern Atlantic coast has been good. The quality is superior to such a degree as nearly to make good the loss in quantity.

Potatoes.—The production of the year is little more than four-fifths of the preceding, and the aggregate estimate will not vary much from the total number of bushels in 1859, 111,000,000, which will afford to each inhabitant four-fifths of the supply of that year. The only States producing in excess of 1869 are North Carolina, Georgia, Texas, Arkansas, Tennessee, Kentucky, Iowa, Kansas, and Nebraska. In all these States there was abundant moisture in the early part of the season, and in most of them the potato matures before the summer heats set in. The decrease in New England ranged from 5 per cent. in Vermont to 38 in Connecticut. The reduction in the West follows the line of comparatively dry weather in spring and early summer, which ran northwest through Missouri and Illinois to Eastern Wisconsin, sufficient and generally abundant rains falling north and west of such line. Another cause of reduced yield, the Colorado potato bug, seriously affected Wisconsin and Minnesota. The reduction in Illinois appears to be 23 per cent., in Indiana, 45; in Ohio, 26; in Michigan, 24, in New York, 12; in Pennsylvania, 14; in New Jersey, 18; in Delaware, 40; in Maryland,

45. The injury by drought was mainly on the sandy lands of the coast from Norfolk, Virginia, to Portsmouth, New Hampshire. A near approach to a failure is reported from Columbia, Pennsylvania, and Douglas, Oregon, and serious losses appear in Essex, Hudson, Mercer, and Burlington, New Jersey.

Late varieties, or those planted late, did best in some counties in northern New England, and the October growth in eastern Iowa was remarkable, especially in Muscatine, where a yield of 300 bushels per acre was not uncommon. In Iowa and Marion counties, in Iowa, a fair yield, not well matured, was obtained, and the late potatoes in Nemaha, Nebraska, were immature. In the eastern counties of Maryland the late crop was a partial failure.

Some large yields are mentioned, as in Elk County, Pennsylvania, where 500 bushels per acre were obtained from lowlands. In McDonough County, Illinois, the crop was so abundant as to sell for only 30 to 35 cents per bushel.

Complaint of rot is not general. Some reports of decay after digging come from New York, New Jersey, North Carolina, and Nebraska.

The quality is reported as somewhat better than last year in Maine, New Hampshire, Vermont, New York, Virginia, North Carolina, Georgia, Mississippi, Arkansas, Tennessee, West Virginia, Kentucky, Iowa, and Oregon.

The Colorado beetle (*Doryphora decem-lineata*) has reached Michigan and Ohio in its emigration eastward, but is still very injurious in Wisconsin and Minnesota.

Sweet potatoes.—The crop has been a large one, nearly every State showing a more than average yield. The quality was uniformly superior, except in Florida, Louisiana, and California.

Buckwheat is a somewhat smaller crop than the preceding one, the loss being in the New England and Middle States.

Full crops of *peas* and *beans* are reported, the former being larger in the south, the latter in the north.

Flax.—This crop will average rather better than last year. A slight increase has been made in Ohio, Michigan, Wisconsin and Kansas.

Castor beans.—Full returns have not been received concerning this crop, which is one of local rather than general culture, but it enjoys much favor in many localities in the South and West, and is yearly introduced into new fields.

Fruit.—The present has been a fruitful year for orchards and vineyards in the Eastern, Middle, and Western States, but less productive in the South, and in California and Oregon, as to apples and pears.

Grapes do not fall below an average in any of the States north of the southern line of Pennsylvania, and range in that section from an average to twenty-five per cent. above. The vineyards of California have been greatly extended, and a large area has come into bearing the present season.

Great yields are reported at different points. Missouri and Southern Illinois report heavy production. Two and a half tons per acre are claimed for many of the vineyards of Hancock County, Illinois. Rarely has there been a more favorable season for ripening grapes in northern latitudes, and the vintage of 1870 ought to be of superior excellence. The Concord and Virginia Seedling take the lead as wine grapes in Missouri. In Franklin County, Kansas, the Catawba and Isabella have done better than the Concord and Clinton.

Few reports of diseases or casualties have been received. In Madison County, Illinois, loss has resulted from mildew, black rot, and from frost.

The apple crop of the Atlantic States is very large; full in Michigan, Kentucky, and Tennessee; but short in most other portions of the South and West. If those of first quality only are considered, the supply is probably not larger than that of last year. Much complaint of injuries by worms is received, and a general tendency to early decay is reported. Poor fruit has been a drug in country markets, not worth transportation, and taxing severely the facilities for barreling, when made into cider. The barrel has usually cost more than the cider contained in it. The cider production of the country has had a manifold increase. Large quantities of apples have been fed to cattle, with evident advantage to forage supplies. In some places apples have been stored for winter use of cattle. Immense quantities have been allowed to rot on the ground.

Pears have been abundant in New England, and a good yield from Virginia to Georgia, but a comparatively small crop elsewhere.

Cranberries do not promise a full supply. But half a crop is reported in Massachusetts, and not a full one in New Jersey. The western reports are favorable. No report has been received from the Northern Pacific coast. The Indians of Utah are making a profitable traffic with this fruit.

Winter grain.—Accounts of fall-sown wheat and rye are generally favorable. Fields are green and promising; in some too great luxuriance appears. Many reports of increased acreage are received from different parts of the country; a few accounts of decreased acreage are received. California is still enlarging her wheat area. Destruction by the fly is serious in Beaver County, Pennsylvania; Knox, Tennessee; Parke and Clinton, Michigan. Red rust has appeared in Cass County, Indiana. The ground has been too dry for early sowing in eastern Maryland. On the contrary, in parts of Missouri seeding has been obstructed by incessant rains. The condition of wheat at this date is somewhat above an average.

Table showing the condition of the crops, &c., on the 1st day of November, 1870.

| STATES. | CORN. | | POTATOES, (Solanum tuberosum.) | | POTATOES, (Batatas edulis, sweet.) | TOBACCO. | HAY. | | BEANS. |
|---------------------|----------------------------------|--|----------------------------------|--|------------------------------------|--|----------------------------------|--|--------|
| | Product compared with last year. | Average quality compared with last year. | Product compared with last year. | Average quality compared with last year. | Product compared with last year. | Average quality compared with last year. | Product compared with last year. | Average quality compared with last year. | |
| Maine..... | 11.2 | 13.3 | 8.4 | 11.2 | | | 7.8 | 12 | 10.7 |
| New Hampshire..... | 9.5 | 11.3 | 6.6 | 10.3 | | | 8.5 | 11 | 10.1 |
| Vermont..... | 11.3 | 11 | 9.5 | 11.1 | | | 9.6 | 11.4 | 10.1 |
| Massachusetts..... | 9 | 11 | 7.3 | 9.2 | | | 8.5 | 10.8 | 8.7 |
| Rhode Island..... | 8.6 | 10 | 7.3 | 10 | | | 10 | 10.3 | 10 |
| Connecticut..... | 8.5 | 11.2 | 6.2 | 8.7 | | | 7.7 | 11 | 8.2 |
| New York..... | 11.8 | 10.3 | 8.8 | 10.3 | | | 8 | 10.9 | 9.8 |
| New Jersey..... | 11.5 | 10.8 | 9.2 | 9.1 | | | 10.6 | 10.4 | 9.5 |
| Pennsylvania..... | 11.2 | 11.9 | 9.6 | 9.7 | | | 9.6 | 10 | 9.9 |
| Delaware..... | 11 | 10 | 6 | 8 | | | 9 | 10 | 10 |
| Maryland..... | 10.1 | 9.9 | 5.5 | 7.7 | | | 10.4 | 10.5 | 9 |
| Virginia..... | 11 | 10.8 | 9.6 | 10.4 | | | 11.8 | 10 | 9.5 |
| North Carolina..... | 11.5 | 11.2 | 11 | 12.4 | | | 12.3 | 10.3 | 12.3 |
| South Carolina..... | 12.7 | 12.2 | 9.7 | 9.8 | | | 12.2 | 10.6 | 9 |
| Georgia..... | 12.2 | 10.9 | 10.6 | 10.4 | | | 12.3 | 11.7 | 11.8 |
| Florida..... | 10.1 | 9.7 | | | | | 11.1 | 10.5 | |
| Alabama..... | 11.7 | 11.2 | 9.7 | 9.8 | | | 8.1 | | |
| Mississippi..... | 10.1 | 9.7 | 9.8 | 10.3 | | | 10 | 10.5 | 9.2 |
| Louisiana..... | 12 | 10.8 | 8.5 | 10.2 | | | 9.1 | 10.7 | |
| Texas..... | 10.3 | 10.1 | 10 | 9.8 | | | 10 | 11.3 | |
| Arkansas..... | 11.6 | 9.7 | 11.5 | 10.5 | | | 9.2 | 10 | 10 |
| Tennessee..... | 13.2 | 11 | 12.2 | 11.1 | | | 11.5 | 10.4 | 10.5 |
| West Virginia..... | 12 | 11 | 9.7 | 10.3 | | | 10.8 | 9.6 | 10.8 |
| Kentucky..... | 12.3 | 12 | 11.2 | 10.6 | | | 12 | 10.4 | 11 |
| Missouri..... | 11.8 | 10.6 | 9.5 | 9.4 | | | 12.3 | 11.1 | 11.3 |
| Illinois..... | 16.5 | 11.3 | 16.5 | 11.3 | | | 10.6 | 9.5 | 9.6 |
| Indiana..... | 13.5 | 13 | 7.7 | 9.5 | | | 10.6 | 10.9 | 9.5 |
| Ohio..... | 13 | 11.6 | 5.5 | 8.8 | | | 9.9 | 10.9 | 10.7 |
| Michigan..... | 13.5 | 11.9 | 7.6 | 9.8 | | | 10.8 | 10.9 | 10.4 |
| Wisconsin..... | 13.3 | 12.5 | 6.9 | 8.8 | | | 9.5 | 10.8 | 9.7 |
| Minnesota..... | 12.3 | 11.5 | 6.6 | 8.8 | | | 10.3 | 11.2 | 10.1 |
| Iowa..... | 11.9 | 11.4 | 10.4 | 10.5 | | | 9.3 | 11 | 10.1 |
| Kansas..... | 9.8 | 9.3 | 13.4 | 9.9 | | | 9.7 | 8.5 | 11.6 |
| Nebraska..... | 10.9 | 10.2 | 10.4 | 8.8 | | | 10.2 | 9 | 10.7 |
| California..... | 9 | 9.7 | 8.9 | 8.8 | | | 10.6 | 8.6 | 9.6 |
| Oregon..... | 12.2 | 10.4 | 8.6 | 10.2 | | | 8.6 | 11.5 | 9.3 |

NOTES ON THE CROPS.

Neither the general public nor our correspondents should expect to see notes from all the counties represented in the monthly reports. A thousand returns are condensed into a single table, and scarcely one in a score presents additional matter requiring separate mention; and a hundred may include remarks of the same tenor, which would be dreary enough if presented in one monotonous string. Yet they are useful in obtaining more accurate facilities for a bird's-eye view of the whole field, and many are worthy of special record for their intrinsic importance.

CORN.

Aroostook County, Me.—The idea that the season in this county is too short and cold for the successful cultivation of Indian corn is giving way as experience demonstrates that nineteen years out of twenty it is a safe crop.

Greene County, Ala.—Now that cotton is low and corn is in demand, all see the folly of planting largely of the former and sparingly of the latter. There seems to be a determination to plant more corn and less cotton in future.

Clarke County, Ala.—Corn was neglected and will not exceed the crop of last year. More attention will be given to provision crops another year.

Fayette County, Tenn.—Crop insufficient for home consumption; due to the increased acreage in cotton, at the expense of the cereals.

POTATOES.

Aroostook County, Me.—An agreeable disappointment in the crop—about the usual yield, while the quality is better than for years. Among new varieties the Early Rose ranks highest. One man planted $2\frac{1}{2}$ bushels and harvested 145 bushels.

Grafton County, N. H.—The dry weather caused a great falling off. In towns where last year 12,000 to 15,000 bushels were made into starch, this year only 5,000 to 6,000 will be manufactured.

St. Louis County, Mo.—Almost an entire failure. Destroyed by the Colorado bug, except in rare instances, where the bugs were picked off or destroyed by the sifting of Paris green on the vines.

Genesee County, Mich.—Potato bugs in immense numbers, but they do not appear to have materially affected the growth or quality of the tubers. (The variety of insect not named.)

Muscatine County, Iowa.—The growth made within the past month (October) is wonderful, and the crop is a large one, in many instances reaching 300 bushels to the acre. The Peach Blow is the favorite.

BUCKWHEAT, FLAX, ETC.

Grand Isle County, Vt.—Buckwheat made large growth, but did not fill well.

Essex County, Mass.—The crops of onions, beets, mangolds, carrots, cabbages, fall about thirty per cent. short of an average, in consequence of drought.

Indiana County, Pa.—A reasonably large crop, but inferior in quality.

Columbia County, Pa.—Buckwheat crop almost ruined by the drought.

Cecil County, Md.—Buckwheat much injured by the hot sun of September.

Henrico County, Va.—Buckwheat a complete failure.

Surry County, Va.—Peanuts a sorry crop. Few good peas; many rotted before digging; field peas a short crop.

New Hanover County, N. C.—Ground peas an average in quality and above in quantity.

Mississippi County, Mo.—Fine crop of castor-beans; their culture on the increase. Also, fine crop of broom-corn, the culture of which is rapidly increasing.

Clinton County, Ill.—Fine crops of castor-beans in this county for the past four or five years.

Montgomery County, Ill.—An enormous yield of turnips and pumpkins, exceeding all demands.

Columbiana County, Ohio.—The large increase in the flax crop is attributable to the fact that a flax mill has been established in the county.

Columbia County, Wis.—Light yield of hops; few yards properly cultivated; price, 8 to 10 cents; crop picked in good condition.

Perry County, Kansas.—In quality the peanut crop has never been better.

Humphreys County, Tenn.—Fine crop of peanuts, harvested in good condition.

FRUIT.

York County, Me.—Greatest apple crop ever gathered in this county; the best have been sold or stored. Every available cask has been filled with cider. Large quantities have been put away to freeze for the cattle, and yet 10,000 bushels will rot on the ground in this county.

Burlington County, N. J.—Apples a very uneven crop; large yield in upper and central sections; in lower part of the county many orchards yield scarcely any.

Kent County, Md.—Though the peach crop was below an average, prices were high; probably \$100,000 were brought into this section of the county from the sale of the crop.

Jefferson County, Mo.—The warm weather of September matured the grapes finely, and made them rich in sugar; the wine is very fine.

Cole County, Mo.—Wine is plenty and good; mostly of Concord and Virginia seedling; Concord will be good at \$1 per gallon, wholesale.

Hancock County, Ill.—Excellent crop of grapes; many vineyards near Warsaw have averaged 5,000 pounds per acre; this county has about 1,600 acres in bearing.

Fond du Lac County, Wis.—Apple buds will be injured by premature growth; early varieties are nearly ready to open.

Douglas County, Neb.—Fruit has not in general succeeded north of the Platte River, in Nebraska, to an extent that would as yet justify the hope that the section is suitable for any but extra hardy varieties.

Walla-Walla County, Wash. Ter.—This valley is proving to be a splendid county for grapes; crop very fine this year; bunches are yet hanging on the vines drying up so as to be very fair raisins.

Thurston County, Wash. Ter.—The Indians are bringing in large quantities of cranberries.

TOBACCO.

Granville County, N. C.—Best crop in ten years.

Darrie County, N. C.—Very fine and fully double any previous crop.

McCracken County, Ky.—The immense number of worms has materially reduced the quantity of the tobacco crop.

Ohio County, Ky.—First frost to stain tobacco on November 1.

Dubois County, Ind.—Ripe, cut, and housed before frost.

Jefferson County, Neb.—A few trials of tobacco have been made in gardens with entire success.

Austin County, Texas.—The second cut of tobacco, which frequently exceeds the first in quantity and quality, is almost worthless, owing to the drought.

Dyer County, Tenn.—Largest crop for some years; quality unusually fine.

Robertson County, Tenn.—Crop housed in fine condition, but the loss of tobacco from the burning of barns is unprecedented, caused, it is thought, by dry weather in September firing the lower leaves, making them light, chaffy, and combustible.

GROWING GRAIN.

Beaver County, Pa.—Greater breadth of wheat sown this fall than for several years; sown two weeks earlier than usual. Considerable complaint of the fly.

Butler County, Pa.—Wheat and rye never more promising.

Queen Anne County, Md.—Acreage in wheat much larger than usual, but commercial fertilizers have been used sparingly.

Henrico County, Va.—Owing to the drought seeding has been slow and badly done, and the wheat is coming up badly.

Cumberland County, Va.—Wheat acreage much larger than last year. Weather fine.

Smyth County, Va.—Very large area of wheat sown, and it is looking well.

Knox County, Tenn.—In several localities the fly is destroying the young wheat as fast as it comes up.

King George County, Va.—Thought to be 40 per cent. decrease in acreage.

Hardin County, Ky.—Wheat looking better than for some years at same date.

Scott County, Ky.—Winter wheat weak, but improving.

Shelby County, Ky.—Wheat and rye growing finely. Acreage in wheat decreased one-half, owing to low price of the grain and the uncertainty of the crop. Rye acreage increased one-third.

Christian County, Mo.—Small grains backward, but improving.

Franklin County, Mo.—Wheat sown in September is looking well.

Scott County, Ill.—Large breadth of wheat sown. Never looked better.

Pike County, Ill.—Winter wheat never looked better.

Tazewell County, Ill.—Fall grain in splendid condition.

Lawrence County, Ill.—Wheat looking unusually well. Decreased area sown.

Parke County, Ind.—Early sown wheat damaged by the fly. Twenty per cent. increase in the acreage.

Ohio County, Ind.—Decreased area sown to winter grain, owing to the dry weather.

Van Wert County, Ohio.—Fall wheat never more promising, with a large increase in acreage.

Oakland County, Mich.—Wheat has a fine growth, the best for a number of years.

Adams County, Iowa.—Wheat, sown August 17, has made an over growth, and it is feared that a cold winter will kill it.

Woodson County, Kansas.—Fall-sown wheat never more promising; nearly double the usual acreage sown in this county. The writer has

been personally over the different sections of southern Kansas, and has not seen a poor field of wheat.

Nemaha County, Kansas.—Largely increased area sown to wheat.

Stanislaus County, Cal.—A much larger breadth of land will be sown to wheat and barley in this county this year than in any former season, not less than 300,000 acres. Five years ago the county did not produce 40,000 bushels of wheat.

EXTRACTS FROM CORRESPONDENCE.

RICE IN SOUTH CAROLINA.

Georgetown County, S. C.—Rice is the specialty of this county. In 1869, the acreage of the county was 16,000. In 1870, 15,123, being 877 acres less. The product for market in 1869 was less than 600 pounds per acre. For 1870, it is estimated that the crop is shorter than last year. The early harvest was favorable. The latter part was very wet, with high tides, and a great deal of the crop was damaged upon the stubble by rains and the overflowing of the embankments. The ante bellum crops of this county averaged 40 bushels of 45 pounds per acre. Since 1865, the crop has never reached an average of 25 bushels. The acreage of tide lands formerly cultivated was about 40,000. Eight of every ten planters have either lost money or made no surplus from rice culture, since 1866. Labor is scarce, and decreased acreage is a consequence. In 1868, about 12,000 acres were planted. It now requires three bushels of seed per acre for planting; formerly two and a half was the average.

RICE AND GRAPES IN UTAH.

St. George, Utah.—The two samples of rice sent me from the Department last spring, were planted in drills early in May, on about a rod of ground, from which I gathered a peck of nice, plump grain the last of September. The tallest variety yields the best. Rice is a success here, and will yield equal to wheat. The bene plant has also done splendidly, and yields about as much as wheat, producing of nice sweet oil, two gallons from the bushel.

The Verdel grape is now in its prime. The new seedling grape, Rio Virgin, is as plump, fresh, and fine on the vine as at any time in the year, and will hang till Christmas. The White Nice and the Gros Calmun, are also plump and fair. Our grape crop is well ripened, and wine-making is completed. In this (Washington) County, not less than 20,000 gallons of a wine, superior to former crops has been the result. Some of the juice has measured 17 with the saccharometer. The Muscat-Hamburg has proven the richest, then the Old Mission, Black Muscatel, &c.

PREMIUM WHEAT.

Marshall County, Ind.—At our county fair there was a premium offered on four acres of the best corn, and four entries were made. The first four acres averaged 88 bushels and 62 pounds per acre, 70 pounds per bushel; the second averaged 83 bushels per acre; the third, 78 bushels; and the fourth, 73 bushels. The crops were raised on land without manure—heavy timbered land, sandy soil. Corn all ripe and dry before frost.

THOROUGH CULTURE.

Muscatine County, Iowa.—The past season, together with that of last year, has taught farmers the benefits that arise from thorough culture. The old, but none the less true adage, "plow deep while sluggards sleep," &c., has been most thoroughly exemplified. We trust the day of "slipshod" farming is about at an end. When we more thoroughly realize that working one acre at a profit, is better than working two at a loss, then will have arrived the agricultural millenium.

THE COLORED AGRICULTURISTS IN LOUISIANA.

St. Tammany County, La.—I have just returned from a six days' ride in the county and was much surprised at what is being done on the poor pine lands. Heretofore I have only visited those farms and plantations on the bayous and rivers. I found through the parish a large number of colored men who have taken the benefit of the homestead act and settled miles from any of the villages, consequently being dependent on what is produced from the land. They have succeeded this year in producing potatoes and corn enough for the winter and spring use. In most places they build fires on the land they wish to cultivate the following year, in order to attract the cattle which are at large in the woods. They also wheel out muck from the swamps in the summer to mix with the cattle manure. Some use fine straw also. They break up the land in the fall, covering with each furrow the straw placed there. The next spring they plow again and in a few days after throw it into ridges and plant. On some of the older farms I saw as good cotton as is generally raised on bottom land. This is brought to market thirty miles by ox teams. Nearly all raise their own meat and send dozens of eggs and chickens to market, besides hundreds of pounds of honey. I saw one colored man who had over two hundred hives of bees, and he told me that he always gets at least twenty-five cents per pound for his honey.

THE "GARDEN OF LOUISIANA."

New Iberia Parish, La.—We possess here the most fertile soil in America that is not subject to inundation, and a climate unsurpassed for promoting vigorous vegetable growth. The five parishes, (St. Mary's, Iberia, St. Martin's, Fayette, and Vermillion,) formed of the old Spanish parish of Attakapas, comprise the richest lands, the most thorough natural system of navigation, and the greatest natural and commercial advantages of any equal surface in the world. This fact is comparatively little known; but as it is susceptible of clear and easy proof, all that is needed is an opportunity of affording the greatest publicity to the same to render Attakapas the aim and center of a prodigious emigration, and the consequent prosperity and happiness of our section. I am a native of Illinois, and my eyes have ranged over the reputed "choice spots" of the Union, but no other can, in my opinion, bear comparison to Attakapas, justly the "garden of Louisiana."

DESTROYING TOMATO AND OTHER WORMS.

Cecil County, Md.—I see recommended the *picking* off of the tomato and other worms and killing them with the foot; but we know of a much better plan. When the worms are bad we kill them by merely

clipping them in half with shears, scissors, or any similar sharp instrument—a sharp knife will do—and let them fall off the vine at their leisure. This plan will commend itself to squeamish persons who are afraid to handle the repulsive looking insects. It is also the quickest way of killing them.

DISEASES AMONG STOCK.

El Dorado County, California.—Here, as in other parts of the State we have more or less scab in our flocks at some seasons of the year, but the disease is easily cured, and those who are most careful are troubled least with it. By the use of the following precaution a flock may be kept entirely free of the disease: To two gallons tobacco water mix one-half pint spirits turpentine, one pint lard oil, and apply, when warm, with a sponge. When a single case may be noticed in the flock apply the above remedy at once, and it will prevent hundreds of other cases. A single application will arrest the disease.

We have another disease, the cause of which we have not been able to ascertain, and for which we have found no remedy. The symptoms are as follows: First. The sheep acts as though it was blind, walking around in a small circle, always in the same direction, and appears terribly cramped, being twisted nearly double. It continues walking around until disabled by the cramp, when it struggles on the ground, generally about ten minutes, and then recovers so that it is able to get up and follow the flock. It may linger for a week, having spasms each day, and appears crazy all the time. I have known a few cases to entirely recover, but eight out of every ten prove fatal. The cramp appears to be along the spine to the brain. I have tried a number of remedies, but all have failed. The disease is most prevalent during the months of September and October. We have lost about two per cent. of our flock within the last two months by this disease. I have never noticed this disease in any other part of the State, though I am informed that it prevails all along the coast to Los Angeles. There are various opinions as to its cause. It is probably caused by some poisonous herb.

Fairfax County, Va.—"Hog cholera" has prevailed to a considerable extent in the western portion of the county, some farmers losing their entire stock. Constipation of the bowels attends the disease, and the only remedy (which has, by no means, always proved successful) is salts; three table-spoonfuls at a dose, for a hog weighing one hundred pounds, followed by the same quantity of castor oil, twelve hours after.

Spencer County, Ky.—Hog cholera prevails to a greater extent than it has for ten years. No remedy thus far discovered.

Montgomery County, Md.—The disease among the hogs continues its ravages, but the cold weather will, we hope, abate, if not stop it.

Livingston County, Ky.—Some hog cholera in the county.

Knorr County, Tenn.—The cholera has appeared among the hogs in certain localities, but only in a few places.

Campbell County, Tenn.—Hog cholera is abating.

Jefferson County, W. Va.—The "chicken cholera" is still doing some damage in our county. We have lost about twenty or twenty-five fowls; others have lost small numbers, perhaps four or five hundred in the county.

Blue Earth County, Minn.—A new disease has appeared in the southern part of the county among young cattle. Symptoms—swollen joints and loss of appetite. The disease prevails among yearlings and calves. No remedy has been discovered as yet.

SOUTHERN AGRICULTURE.

The Commissioner of Agriculture, accompanied by the statistician of the Department, visited the city of Augusta, Georgia, on the last week of October, in response to invitations to represent the Department of Agriculture at the convention called as a "Congress of the Cotton States," and to observe the progress of agriculture as indicated by the agricultural exhibition held at Augusta at the same time.

The convention was largely attended by delegates from societies of all the Southern States; it was organized by the selection of Hon. H. V. Johnson, of Georgia, as president; speeches were made upon the necessity of a wider range of production; committees were appointed for practical work *ad interim*; and Selma, Alabama, was designated as the place for the next annual meeting.

The exhibition was quite successful, in material and attendance—the stock department alone being comparatively meager in quantity and quality.

Addresses were made by the president of the Augusta society, Dr. Tutt; by Judge James Lyons, of Richmond, Virginia; by Mr. Compton, of Maryland; and by Hon. Horace Capron, Commissioner of Agriculture. The latter was as follows:

MR. PRESIDENT, AND LADIES AND GENTLEMEN: It is with pleasure that I have accepted your invitation to be present and to cooperate with you for the development of your industry. In the exhibition of the Cotton States Association, as witnessed yesterday, I see an earnest of the spirit of progress which I hope may animate the practical efforts of that association and of the congress here assembled. In the admirable address of Dr. Tutt, your president, I was delighted to see embodied the principles which underlie true industrial progress, and I heartily commend the practical suggestions of the orator of the day, Mr. Compton, looking toward larger production and fewer acres.

I thank you for this opportunity of presenting, very briefly, a few suggestions concerning the immediate pressing agricultural needs of the South. You will permit me to express my convictions plainly, in a spirit of utmost kindness and sympathy. You knew well, and have boasted long, the advantages and resources of the "cotton States;" the great variety and productive capacity of your soils; a delightful climate, so varied by elevation and configuration of surface as to be adapted alike to the fruits and fibers of the tropics and all the products of the temperate zones; a wealth of precious and useful metals sufficient to supply for generations the material for the artisans of the world; an amount of water-power wonderful to contemplate, and the largest supply of timber and wood to be found within the United States. Yet you are constantly and rapidly reducing the fertility of those soils, and turning out farm after farm to swell the area of the hundred million acres of exhausted lands. You ignore the marvelous capabilities of your sunny climate, in neglecting the myriad forms of production to which elevation, latitude, situation, soils, and various natural peculiarities contribute so munificently. Your minerals are hidden in the bowels of the earth, waiting to respond to the call of enterprise and the magic touch of labor; your water-power, in its silent majesty or resistless energy, goes "on forever" in its thousand lines of march to the sea, occasionally reminding you, as at Richmond or in the Shenandoah, of its mighty capabilities which you have so long permitted to run to waste.

Your forests are solitudes, unblest with the hum of busy and enriching labor, while your very hoe-handles are often brought from distant States, and your finest timber is remorselessly girdled that your lands may be cleared by that slow woodman, grim decay.

You possess a tract of country fit for a mighty empire. It is actually a wilderness, almost a solitude. Its railroads, turnpikes, farm improvements, scientific husbandry, manufactories, model school-houses, and churches are yet mainly in the future. All this work is before you. It is true the country is comparatively new and very wide, and the workers are few; but parts of it have been settled for two hundred years, and yet scrubby pine forests grow where the settlers grew their supply of corn and tobacco. Has improvement been commensurate with your resources and in proportion to the numbers of the population; and has population kept pace with other less favored portions of the country, or made such advances as might reasonably have been expected with these immense resources? The truth compels me to say *no*; your consciousness

echoes the negative. Why is it? The reasons are many. Prominent among them are these:

First. A wasteful and slovenly system of agriculture, the curse of our whole country, has been practiced in the cotton States.

Second. The extension of the raw products of agriculture by manufacture has been ignored or discouraged, culture has been restricted to a few crops, and the policy of buying nearly everything needed to eat, drink, or wear has been encouraged.

Third. Labor has been mainly restricted to a servile class, becoming a badge of dishonor rather than the crown of glory that it is; a large portion of the people have formerly lived in comparative idleness or unproductive employment; and the intellect and ambition of the influential or ruling class has been spent upon politics to the neglect of material development.

You have sometimes held commercial conventions while destitute of any commerce of your own. It is a significant sign of the times that you now, an exclusively agricultural people, assemble to consider the means of agricultural improvement and the general prosperity of your section.

As you have listened to my frank detail of obstacles to progress, permit me with equal brevity to note certain means of recuperation.

A RESTORATIVE SYSTEM.

My first counsel would be, practice a restorative instead of an exhaustive system of agriculture. A system that involves abandonment of lands and removal to new scenes is unworthy of the age and a reproach to modern civilization.

No man is worthy to be a farmer who does not annually leave his land in better tilth and strength than he found it. The intellect must share more largely with muscle the toil of agriculture; machinery directed by skilled labor, and propelled by brute force, and also by the mighty power of steam, must take the place of expensive and inefficient human strength. This change, as I said in this State a year ago, "involves the necessity for smaller farms, better culture, liberal use of manure, rotation in crops, and a larger working capital in proportion to permanent investment." You are already spending millions annually on the old lands of the Atlantic States for commercial fertilizers. While I would commend a judicious expenditure in this direction, I would make this a basis of a practical rotation with a course of grasses and other restorative agencies of scientific agriculture.

The business of agriculture should be an industry and not a speculation. The insane pursuit of specialties has long been a curse to American agriculture. A whole community runs wild upon hops, when selling at fifty cents per pound, and in two years they are scarcely worth the price of picking; and extravagance, begotten of high expectations, is forthwith followed by bankruptcy. Wheat brings \$2 per bushel, and whole States become wheat-fields, while every other interest languishes, until the bread crop becomes so abundant as to be fed to swine in preference to shipment for human food. The sheep with wool at \$1 per pound, holds high place in popular esteem, but is kicked from the pasture by every Randolph of the farm at the first indication of a heavy decline in the value of its fleece. In your section cotton, a great boon to your agriculture as a constituent in your aggregate of production, may become an unmitigated evil if left to usurp the place of all other crops. The crop of last year produced \$100,000,000; more than fifty per cent. larger than ten years ago. Three millions of bales may command a profit of \$40 per bale, while five millions may not bring a dollar above their cost. But present profit is not the main consideration. The increase in value and enlargement of the productive capacity of the soil, by a judicious rotation, including the restorative influences of green-cropping and cattle-feeding, is an increase of capital, a source of larger annual income, and an addition to the inheritance of one's children. It not only insures a profit from cotton culture, but enables the planter to pocket the entire proceeds of its sale, other products feeding man and beast. This leads me to another word of counsel, namely:

PRODUCE MORE AND BUY LESS.

As an individual grows rich by what he saves rather than by what he makes, so a community thrives by the amount of its surplus more than by the extent of its sales. How often has the money received for a crop of cotton failed to discharge indebtedness incurred for all other supplies? How many plantations have been mortgaged to secure such debts? The day will come, if wise counsel is heeded, when the products of cotton will be *all surplus*, other products paying the expense of the farm. I have received, officially, abundant testimony, from individual successes and failures, of the superior profits of mixed husbandry with cotton. I am positive in the conviction that the permanent prosperity of these States depends upon a more diversified agriculture. While it is true that a large cotton crop may produce actually less money than a small one, no sane man will question the political economy which adds to this source of revenue many others, which, together, make an aggregate many times larger.

For some years to come the cotton manufactures of the world cannot contribute to the industry of these States more than two or three hundred millions of dollars per annum; while the total production, with the variety required to realize the highest capabilities of soil and climate, should command a thousand millions, and two thousand might be obtained within a period of ten years, if the whole population, with recruits from other States and from Europe, should unite all their efforts and their industry for the accomplishment of so grand an object. The combined value of all other products is even now materially larger than the value of cotton, but the proportion should be increased until it shall stand at least five to one. The cheapest beef and cheapest wool produced in the country are now the product of the grasses of the Gulf States.

The annual sales of animal products should soon be made to exceed greatly the value of the cotton crop. The wine industry of France produces three hundred millions of dollars annually, and supports a population of six millions. Then why should not your sunny slopes, best suited to wine production of any section of the continent east of the Rocky Mountains, compete with the foreign vineyards, at least in our own markets?

There is no reason why we should send abroad for a pound of sugar, though our home production was last year but ten per cent. of the consumption, when Louisiana alone has suitable lands of sufficient area to supply the present wants of the country. Your fruits, in wonderful variety, including those of the tropics, the products of which figure largely in our imports, should annually add millions of dollars to the wealth of the country. Scores of new and useful plants should be added to the list of those already in cultivation. I am yearly adding many through the Department of Agriculture, among the most promising of which, the present season, are the *Corchorus* (or jute) and the *Cinchona*, which yields the quinine. I shall continue these experiments of acclimatization, hoping to render you material aid in your efforts in diversifying your agricultural industry. In close connection with this idea of variety of production, permit to me present my third item of counsel.

MANUFACTURE YOUR OWN COTTON.

If England, by the magic of labor, can make a dollar's worth of your cotton produce two dollars, and if France, by still more delicate manipulation, can make it yield three, why should not your people, with willing hands to work, and abundant water and fuel for power, manufacture a large portion of your crops, at least into yarns and coarse fabrics, and thus add to the annual value of your industries a hundred millions more? Thus you may save freight, storage, commissions, the profit of manufacture, and build up local markets to consume more of the edible products of your agriculture.

Here, in Augusta, you have furnished a notable illustration of the feasibility and profit of manufacturing, in an enterprise of magnificent proportions, two-thirds of the capital of which has come from its own net earnings. You have already other similar works, and should establish them in every direction, enlarging them from their own profits, until a large share of your cotton shall be manufactured within your own borders.

Manufacture is allied to agriculture, while commerce is an expensive non-productive go-between. There are few interests of agriculture which do not involve manufacture. In dairy farming, milk is sold with no aid of manufacture, except as it is "extended" by aid of the pump, but cheese and butter are the products of manufacture, which last year yielded the value of \$246,000,000. Flax and hemp can only reach the market through certain processes of manufacture; wheat must be thrashed, corn shelled, hops carefully kiln-dried; so with many other crops; indeed, the farmer must necessarily be a manufacturer. High farming is always and only found in connection with manufacturing skill in extending the raw products of agriculture; and no purely agricultural nation can expect to attain wealth, a high state of civilization, or great political power. These are facts which should be carefully pondered and promptly acted upon.

Why is not the South to-day the great manufacturing section of the country? It is far better adapted to such an industry than any other section. The answer may be found in a paragraph from a former official statement emanating from the Department of Agriculture relating to this section:

"The path of progress has been equally open to all; laws supposed to favor a diversified industry have been applicable to all States alike; the best water-power and cheapest coal are in States that make no extensive use of either; milder climates and superior facilities for cheap transportation have furnished advantages that have not been transmuted into net profits; and yet, such communities, daily inflicting irreparable injury upon themselves by neglecting the gifts of God and spurning the labor of man, are wont to deem themselves injured by the prosperity flowing from superior industry and a practical political economy."

As a closing suggestion, one in which the whole future prosperity of your States is involved in an eminent degree, permit me to implore you,

GIVE PROFITABLE LABOR TO ALL YOUR PEOPLE.

Depend not upon the coolies of China or the people of Europe, until all your people, of whatever color, condition, or capacity, have full employment for mind and muscle in developing the wonderful capabilities under your control.

The practical question of the day is not, Where shall we procure more labor? but, rather, How can we utilize and profitably employ the varied capacities, tastes, and inventive powers of every individual of our present population? What can each accomplish with the best results? What can be done for the employment of men practiced in no skillful employment? What for indigent women, and even children, dependent upon their own exertions for subsistence, for an education and advanced social positions? The State that furnishes employment for every son and daughter, labor suited to every capacity and taste, heavy toil for the unskilled and plodding, dextrous and delicate manipulation for the artistic, effort with soul in it for the intellectual, will become instinct with life, energy, progress, wealth, and contentment. Then labor will be cheerful, toil a pleasure, and its beneficent results enhanced beyond the highest expectation. Such results can never follow the practice of a few rude industries.

It is only a truism to say that the wealth of a country is the aggregate of its labor beyond its requirements for subsistence; yet the truth of the saying is not sufficiently realized. The largest results in accumulation can, therefore, only be obtained by securing the best and most effective efforts of every individual. All must unite, then, and, with heart and will, mind and muscle, contribute to the great end of enriching, beautifying, and blessing this glorious land.

I am satisfied that a new era is dawning; that the rule of one idea is weakening; and that the diversification of production has already commenced, opening a career of activity and a vista of beauty unwitnessed in the brightest days of this nation.

EXPERIMENTS WITH DEPARTMENT SEEDS.

William N. Byers, editor of the Rocky Mountain News, published at Denver, who has distributed samples of Department seeds, and collated results of experiments, sends the following statements:

From Thomas Skerritt; farm six miles south of Denver, on upland prairie, one mile east of Platte River. The ground has been under cultivation five years; never sub-soiled or manured.

No. 1. Ears of large yellow corn; planted May 15; plowed three times; irrigated three times; ripe September 1 to 10; field of eight acres; yield, 56 bushels per acre.

No. 2. Morton white potatoes; specimens six by three inches; planted about May 15; plowed and irrigated three times; ripe October 1; yield, 250 bushels per acre.

No. 3. White winter Touzelle wheat, from France, through the Department of Agriculture; sowed in November 1869, so late that it did not come up until spring; irrigated twice; ripe August 15; from the small quantity grown is satisfied that it will yield over 40 bushels per acre.

No. 4. White spring wheat, sowed early in March; irrigated three times; harvested August 1; 17 acres gave 30 bushels per acre. After coming up in March, it was considerably injured by frost, "the first time I have known such a thing to occur in Colorado."

No. 5. A single white potato, from the Platte Valley, twenty-five miles north of Denver; size, about 6 by 3½ inches, and very firm; grown on bottom land, without irrigation; yield, 250 bushels per acre.

No. 6 to 12, inclusive, are from the farm of Peter Magnes, seven miles south of Denver, on the east side of the Platte, part in bottom and part in upland. Altitude above the sea, about 5,300 feet. His farm has been well cultivated for twelve years, and some portions of it have probably received a small quantity of manure.

No. 6. Siberian spring wheat; "this is our best spring wheat;" ground plowed in the fall; sown April 10, 12 bushels on 17 acres; not irrigated; harvested August 9; total yield, 930 bushels, or almost 55 bushels per acre. The seed was soaked six hours in blue-stone water, then spread upon the barn-floor, and quick-lime sifted over it before sowing.

No. 7. Touzelle winter wheat; first year from the Department of Agriculture; sowed November 20, near some brushy ground, which was infested with rabbits, that destroyed much of it; saved only half a bushel from one package of seed; the sample is excellent.

No. 8. Tappahannock fall wheat; second year from Department of Agriculture; sowed November 20; four bushels, drill measure, on four acres; irrigated twice; date of harvest not given; total yield, 150 bushels, or 37½ bushels per acre.

No. 9. Arnautka spring wheat; grown in 1869; third year from Department of Agriculture. First year, the yield was one gallon; the second, 31 bushels from one-third of an acre; hoed twice, but not irrigated; third year, sowed 25 bushels, drill measure, on 25 acres; required no irrigation; harvested 1,150 bushels. Millers found it too hard to grind, and it was served for chicken feed. None sowed since; a quantity of it yet on hand.

No. 10. English Excelsior oats; second year from Department of Agriculture; land plowed in the fall; planted April 21; four bushels, drill measure, on four acres; irrigated once; harvested 232 bushels.

No. 11. Prussian oats; second year from Department of Agriculture; planted April 13, on fall plowing; two bushels, drill measure, on two acres; irrigated once; harvested August 2; 106 bushels.

No. 12. Swedish oats, from the Department of Agriculture; sowed April 13, on fall-plowed land; two bushels, drill measure, on two acres; irrigated once; harvested August 10; 166 bushels. The planting was about three weeks too late, as the plants grow very slowly in the first part of the season. It is hardier than the common oats, and withstands the spring frosts much better.

No. 15. Siberian spring wheat; grown on high, sandy prairie; fifth crop from the same land; plowed the ground and harrowed in wheat about the middle of April; did not irrigate; harvested August 10; average yield, 25 bushels per acre.

No. 16. Two-rowed, bearded spring barley; seed from the Agricultural Department; grown on rich bottom land, spring plowing; sowed April 20; not irrigated; harvested August 5; yield, 50 bushels per acre.

No. 17. Norway oats; land plowed in the fall; harrowed in the spring; oats sown April 6; 40 pounds to the acre, and harrowed twice; irrigated once; harvested July 20; yield, 83 bushels to the acre.

No. 18. Surprise oats; grown on high, sandy prairie, following sugar beets; plowed in the spring; planted about May 20; not irrigated; harvested about September 10; yield, 50 bushels per acre.

San Pete County, Utah.—A considerable amount of Tappahannock wheat has been sowed this fall. That species of wheat is a decided success here. It has to be sowed last of August or first of September, so as to be irrigated once before the weather gets too cold.

The Swedish black oats yielded sixteen quarts to the square rod; which will all be sowed again. The black oats have been our preference, but this Swedish oat grows a good deal thriftier, and it is thought to be better than the black oats. The length of the straw averaged five feet and nine inches.

The Saxonian barley had good heads, but the straw grows too short

for binding, and on that account too much grain is lost between and in the water drills.

Henderson County, Illinois.—About two years ago I received some wheat from the Department, called Russian wheat; I sowed it and harvested a very poor quality of wheat, but the season was very unfavorable. I sowed it again and this year thrashed nine bushels of excellent wheat. It is all sown again this fall and looks fine.

The English turnip seed has given very good satisfaction, also the peas and many other garden seeds. I have distributed the seeds free of charge, and the Department has many thanks for the same.

Columbia County, Oregon.—I received last fall one quart Tappahannock wheat from the Department. Sowed last of September, broadcast. Harvested July 9. Lost in thrashing about 10 pounds; yield 82 pounds. The heads were medium size. Grain plump and larger than those received from the Department. Ripened thirteen days earlier than any other wheat raised here. The White Polish wheat was sowed at the same time, but not one-third of it came up. Did not do well.

PREMIUM CORN CROP IN PENNSYLVANIA.

The Brandywine Farmers' Club of Chester County, Pennsylvania, has awarded to David H. Bronson, of Guthrieville, the premium for the best four acres of Indian corn, his crop averaging 127 bushels and 33 pounds to the acre. The height of the stalks varied from 13 to 16 feet, many measuring seven inches in circumference. In his statement to the club, Mr. Bronson said that last fall and spring he applied 100 wagon-loads of unleached livery and barn-yard manure, broadcast, on 25 acres of clover and timothy sward, 50 loads of which were hauled a distance of three miles, all furrowed down in April and the first week in May. On the land on which the premium crop was grown, he applied, in addition to the stable manure, on the sod, three ox-cart loads of hog-pen manure to the acre. After plowing and thoroughly pulverizing the soil, he marked out rows one way $3\frac{1}{2}$ feet apart, dropping the corn by hand, two grains, 15 to 18 inches apart, and applied to each hill a handful of hen manure, ashes, and plaster, of equal parts, covering with hoe May 10. On 12 acres of the 25 cultivated, 500 bushels of lime were applied and cultivated in; the remaining 13 acres had previously been limed on the sod. In regard to the use of fertilizers Mr. Bronson remarked:

Observation has taught me to believe that farmers who have almost abandoned the use of lime, and substituted many of the various so-called fertilizers, are impoverishing their lands, and have been deprived of their hard earnings, having been induced to purchase by the ingenuity of manufacturers, producing numerous testimonials of their magic results.

If we were entirely dependent upon the patent manures in the market, our land would in time become almost as barren as that of the great Sahara, and our children would be crying for bread. Twenty-five years back, Brandywine and her sister townships were illuminated almost nightly by the light from some lime-kiln in the neighborhood; to-day we find them converted into ice-houses, and the trade entirely in the hands of the few who make it a special business. When we apply lime and barn-yard manure, we need no stakes to mark the result. Their application has long since ceased to be an experiment—the effects are evident. Raw-bone, beyond doubt, is an excellent fertilizer; yet its market value is such that the farmer cannot afford to apply it in quantities necessary for a permanent substitute for lime. An old horse, after having faithfully served the will of his master and paid the debt of nature, is more valuable, properly managed, than one ton of most of the fertilizers in the market. The deposits in the hennery are valuable when mixed in equal parts with plaster, and applied to

corn, or wheat, broadcast. Good shelter for our barn-yards is also one of the very best investments a farmer can make; manure exposed to the sun and drenching rains in the barn-yard is almost worthless, the substance of fertilizing properties having long since polluted some rivulet, and passed into the ocean.

Mr. Isaac L. Sahler, of West Brandywine, raised on one acre 131 bushels and 26 pounds of corn, allowing 70 pounds of ears to the bushel.

THE AMERICAN DAIRYMEN'S ASSOCIATION.

The sixth annual convention of this association will be held in Utica, New York, on Tuesday, Wednesday, and Thursday, January 10, 11, and 12, 1871. The full programme for the meeting is not yet settled upon, but the secretary presents the following as constituting the main features of the convention:

Addresses will be made by the following gentlemen on the subjects specified:

Donald G. Mitchell, of New Haven, Connecticut, "How far and in what way the practical farmer or dairyman can best avail himself of the teachings of science."

Professor George C. Caldwell, of Cornell University, "The manufacture of cheese in Germany, France, Switzerland," &c.

Joseph Harris, of Rochester, New York, "Fattening cows on dairy farms."

The following topics will come before the convention, and short papers, introductory to the general discussion of each theme, may be expected from the gentlemen named in connection with each subject:

Is there a gradual decline in the amount of dairy products in all our older dairy regions? If so, what is the cause and what the remedy? X. A. Willard, of Herkimer.

Is there any way by which patrons of butter and cheese factories can receive credit for the milk delivered according to its actual value, and not according to its weight or measure?

Should not every dairyman practice soiling his cows in connection with pasturage, and what crop or crops are best for the purpose? Harris Lewis, of Herkimer.

What shall be done with the cream which rises upon the milk during the night, in cases where the agitator is not used? L. B. Arnold, of Tompkins.

Grinding curds—is it advantageous or otherwise? Alex. Macadam, of Montgomery.

Management of a good butter dairy. O. S. Bliss, of Vermont, and S. A. Farrington, of Tompkins.

Would the consumption of cheese be promoted in any considerable degree by the more general manufacture of small cheeses? A. Holdredge, of Otsego.

Condensed milk manufacture.

What is the best method for maintaining an even temperature in cheese-curing rooms?

Proper construction of cheese factories as bearing upon the quality of the product, as also with reference to convenience and durability. Dr. L. L. Wright, of Oneida.

Causes of tainted milk, and the remedies.

What have been the lessons of the past year?

Ample time will be allowed for the full discussion of each subject, and members may bring before the convention such other pertinent subjects as they may desire to present for consideration.

THE VALLEY OF THE RIO GRANDE.

Mr. F. E. Starck, secretary of the Esperanza Agricultural Association, Brownsville, Texas, writes to the Department, under date of November 9, that the drought has been severe this year, but that, notwithstanding this, agricultural interests are progressing generally. Cotton, which was planted early, the latter part of January or early in February, has yielded a fair crop. Sugar-cane, though a little backward, still looks as well as the best which Louisiana can produce. The first crop of corn was short, but the recent rains have insured a good fall crop. There is now standing on the experimental farm of the associa-

tion 55 acres of excellent broom corn, which was being cut. It was planted dry, and did not come up until after the first rain in September, some of the seed lying in the ground nearly two months. Also 20 acres of corn, which will be ripe within the month; 10 acres of beans; and 2 acres of seed sugar-cane, which will be left standing until about the middle of December, as frosts rarely occur before the latter part of the month.

From the responses of the officers of the above association to a series of questions propounded by several gentlemen of Illinois, seeking information relative to the resources and capabilities of Cameron County, we condense the following facts: The seasons are not well marked in that latitude; cotton, corn, sugar-cane, potatoes, &c., are planted in February. There are occasional light frosts in December, January, and February, accompanied by cold north winds, lasting one to three days. Cotton picking from June 1 to end of December. Mean temperature from June to the middle of September, 80° F. The heat of summer is always tempered by Gulf breezes. The climate is healthy and congenial to children. The past five years have been very favorable to agriculture. Formerly there were some years of remarkable drought, but ample means of irrigation exist. No Government land in the county. All the lands are well adapted for cultivation or for stock-raising. General aspect of the land, slightly rolling, open prairie, and timber. The prevailing timber is ebony, mezquit, acacia, palm, willow, elm, Mexican ash, hackleberry, and many other smaller but useful varieties. There is a great abundance of land fit for raising cotton, tobacco, sugar-cane, corn, castor beans, grapes, figs, peaches, lemons, oranges, &c. Few running streams, but there are lagoons, and water may be had anywhere by digging. There are sufficient highways in dry weather, but the public roads are not improved. The home consumption affords the market for most crops; Mexico for cotton and sugar; also New Orleans, Galveston, New York, and Liverpool by sea direct. The Rio Grande is navigated by steamboats 400 miles. Neither grist nor saw mill in the county, though there is a demand for both. Native horses, small but hardy, \$10 to \$30 each; mules, \$20 to \$40; milch cows, \$15; working oxen, \$20 to \$30 per yoke; beef cattle, \$5 to \$8 per head; sheep, 75 cents to \$1 50 per head; and swine, \$3 to \$10 per head. The prospect for mechanics is not so good at present as for agriculturists, horticulturists, and stock-raisers. Two newspapers published in the county. The cost of living is much less than in the Northern States. Prime beef sells in the market at 2 cents per pound. Corn, vegetables, and fruit are abundant, and can be produced in great quantities. Clothing (of which little is needed) and household furniture are somewhat higher than at the North. A good family house, with out-houses, &c., of native materials, can be constructed for \$100 to \$200. Price of unimproved land to settlers, 75 cents to \$2 per acre; part cash. Improved land not for sale, except at high prices. Settlers welcomed by the people, and the population is increasing. Churches, a college, and good schools at Brownsville, the county seat. The best route to Cameron County is via New Orleans, per steamship, to Brazos Santiago.

THE RAINY SEASON IN CALIFORNIA.

From a journal kept by Dr. Shaw, of Santa Barbara, California, it appears that in the three years preceding the present the first rain fell

there on the 5th of November. From observations made in San Francisco the beginning and the ending of the rainy season since 1860 are shown as follows:

| Years. | First rain. | Last rain. | RAINY SEASON. | |
|----------------|--------------|------------|---------------|----------|
| | | | Begins. | Ends. |
| 1860-'61 | October 4 | May 22 | December 6 | April 5 |
| 1861-'62 | November 1 | May 12 | November 10 | April 14 |
| 1862-'63 | November 5 | May 19 | December 18 | April 23 |
| 1863-'64 | September 19 | May 17 | November 11 | April 4 |
| 1864-'65 | November 15 | May 19 | November 23 | March 4 |
| 1865-'66 | September 24 | June 8 | November 13 | March 31 |
| 1866-'67 | November 3 | May 17 | November 16 | April 12 |
| 1867-'68 | September 14 | June 23 | November 19 | April 13 |
| 1868-'69 | October 1 | May 19 | December 17 | March 29 |
| Mean ..... | ..... | ..... | November 28 | April 10 |

The middle of January is considered the dividing point in the rainy season. In January, 1862, the rain-fall amounted to 18 inches. In January of 1860, 1861, 1864, the rainfall was only a fraction above one inch in each month. It requires 7 to 10 inches in the coast counties, distributed very evenly, to insure a moderate crop.

STOCK SALES.

The Forest Hill herd of short-horns of Mr. J. H. Spears, Tallula, Illinois, was sold at auction on the 23d ultimo: Major Jones, one-year-old bull, sold to D. B. Canfield, of Philadelphia, Pennsylvania, for \$700; Major Story, two years old, to Timothy Day, Winchester, Iowa, \$555; Duke of Forest Hill, two years old, to same, \$520. Two other one-year-old bulls sold for \$505 and \$310, respectively; and one, 18 months old, for \$455. Three bull calves sold for \$500, \$425, and \$95, respectively. Of the cows sold, a seven-year-old and a two-year-old sold for \$1,000 each; a two-year-old at \$795; a five-year-old, \$760; a seven-year-old, \$710; a six-year-old, \$500; a four-year-old, \$460; and seven others, from two to nine years old, at prices ranging from \$150 to \$370 per head. Seventy-two Berkshire pigs sold at an average of \$27 per head. The average is lower from the fact that 23 of the pigs were small.

Mr. J. H. Davis, of Chesterfield farm, near Danville, Kentucky, recently sold about half of his herd of thorough-bred cattle. Ten bulls bringing an average of about \$100 per head; the highest price realized being \$163, the lowest, \$66. Twenty-one cows and heifers averaged about \$151 per head; highest, \$260, lowest, \$57. A number of Berkshire pigs, imported, brought prices ranging from \$41 to \$174 for the boars, three to six months old; and from \$43 to \$90 for sows, three to four months old. Pigs bred by Mr. Davis sold at from \$26 to \$60 per head.

IMMIGRATION.

A report has recently been made by the Statistical Bureau of the Treasury Department, giving the numbers and nationalities of immigrants coming into this country in fifty-one years, from which it appears that 7,448,940 persons have taken up a residence here during that period. An analysis of this statement shows that 51 per cent. (3,826,040) have come from the British Isles, and nearly 40 per cent. (2,946,971) from the continent of Europe, 4 per cent. from North America, and less than 2 per cent. from Asia.

The table of nationalities is arranged in the order of their numerical prominence.

Table showing the nationalities of the alien passengers arrived in the United States during the fifty-one years ended September 30, 1870.

| | | | |
|--------------------------------|-----------|-------------------------------|-----------|
| Germany, not including Prussia | 2,250,822 | Japan | 215 |
| Great Britain, not specified | 1,824,078 | Greece | 195 |
| Ireland | 1,406,030 | India | 178 |
| England | 501,316 | Malta | 127 |
| British America | 271,185 | Cape of Good Hope | 88 |
| France | 245,147 | Jamaica | 85 |
| Countries, n. s. | 204,627 | Hayti | 81 |
| Sweden and Norway | 151,104 | East India Islands | 79 |
| China | 108,610 | Cape de Verde | 71 |
| Prussia | 100,983 | Liberia | 64 |
| Scotland | 82,403 | Bermudas | 61 |
| Switzerland | 61,269 | Guiana | 53 |
| West Indies, n. s. | 45,558 | Porto Rico | 50 |
| Holland | 30,905 | Brazil | 45 |
| Italy | 23,387 | Venezuela | 40 |
| Denmark | 23,221 | Peru | 36 |
| Spain | 23,096 | Sandwich Islands | 35 |
| Mexico | 20,039 | Arabia | 33 |
| Belgium | 16,850 | St. Helena | 33 |
| Wales | 12,213 | Chili | 28 |
| Austria | 7,904 | Asia, n. s. | 24 |
| South America | 7,407 | Egypt | 20 |
| Azores | 6,636 | New Zealand | 17 |
| Portugal | 4,416 | Persia | 14 |
| Cuba | 3,960 | Iceland | 11 |
| Poland | 3,955 | Corsica | 11 |
| Russia | 2,930 | Barbary States | 11 |
| Sardinia | 2,103 | Buenos Ayres | 7 |
| Central America | 1,667 | Society Islands | 7 |
| Sicily | 675 | Abyssinia | 5 |
| Hungary | 488 | Islands of the Pacific, n. s. | 5 |
| Africa | 471 | Syria | 4 |
| Madiera | 313 | Bolivia | 3 |
| Turkey | 299 | Miquelon | 3 |
| Canary Islands | 290 | New Granada | 2 |
| Australia | 246 | Paraguay | 1 |
| Total | | | 7,447,745 |

MARKET PRICES OF FARM PRODUCTS FOR NOVEMBER, 1870.*

NEW YORK.

| | | | |
|---------------------------------------|--------|----|--------|
| Flour—Superfine State..... | \$5 25 | to | \$5 40 |
| Western superfine..... | 5 25 | to | 5 40 |
| Extra western..... | 5 65 | to | 6 25 |
| Wheat—Spring, (new)..... | 1 28 | to | 1 31 |
| Winter red and amber western..... | 1 30 | to | 1 35 |
| White Michigan..... | 1 40 | to | 1 55 |
| Corn—Western mixed..... | 82½ | to | 84½ |
| Yellow..... | 90 | to | — |
| Oats—Western..... | 54½ | to | 55 |
| Hay—Spring shipping..... | 1 10 | to | 1 15 |
| Pork—Mess..... | 24 00 | to | 25 50 |
| Prime..... | 21 00 | to | 22 50 |
| Beef—Plain mess..... | 19 00 | to | 15 00 |
| Extra mess..... | 15 00 | to | 18 00 |
| Lard..... | 14 | to | 16½ |
| Butter—Western..... | 20 | to | 32 |
| State dairy..... | 24 | to | 45 |
| Cheese—Dairy..... | 7 | to | 14 |
| Factory..... | 10 | to | 15½ |
| Cotton—Low middling, uplands..... | 10½ | to | — |
| Middling, uplands..... | 17 | to | — |
| Tobacco—Sound lugs, light grades..... | 7½ | to | 8 |
| Com. leaf, light grades..... | 7½ | to | 8½ |
| Med. leaf, light grades..... | 8½ | to | 9½ |
| Wool—Combing fleece..... | 55 | to | 60 |
| Extra pulled..... | 37 | to | 42 |
| Texas, com., unwashed..... | 23 | to | 26 |

CHICAGO.

| | | | |
|--------------------------------------|-------|----|-------|
| Flour—White winter ex., choice..... | 7 00 | to | 7 50 |
| Red winter extra..... | 4 75 | to | 6 00 |
| Spring ex., good to choice..... | 5 00 | to | 5 50 |
| Superfine..... | 4 00 | to | 4 50 |
| Wheat—No. 1 spring..... | 1 00 | to | 1 07½ |
| No. 2 spring..... | 97 | to | 1 05½ |
| No. 3 spring..... | 91 | to | 1 01 |
| Corn—No. 2..... | 52 | to | 56 |
| Rejected..... | 48 | to | 53 |
| Oats—No. 2..... | 33½ | to | 35½ |
| Rejected..... | 34 | to | 34½ |
| Hay—Timothy pressed, (or track)..... | 16 00 | to | 17 00 |
| Prairie pressed, (or track)..... | 11 00 | to | 12 00 |
| Pork—Mess, (old)..... | 24 00 | to | 24 50 |
| Mess, (new)..... | 22 00 | to | 22 50 |
| Beef—Mess..... | 11 25 | to | 11 50 |
| Extra..... | 13 25 | to | 13 50 |
| Lard..... | 14½ | to | — |
| Butter—Choice..... | 28 | to | 30 |
| Medium to fair..... | 25 | to | — |
| Wool—Unwashed, fine..... | 25 | to | 26 |
| Unwashed, coarse..... | 26 | to | 27 |
| Tub..... | 42 | to | 48 |

CINCINNATI.

| | | | |
|---------------------------------|-------|----|-------|
| Flour—Family..... | 5 75 | to | 6 00 |
| Extra..... | 5 40 | to | 5 60 |
| Superfine..... | 4 75 | to | 5 00 |
| Wheat—No. 1 white..... | 1 15 | to | 1 25 |
| No. 2 white..... | — | to | — |
| No. 1 red..... | — | to | 1 12 |
| No. 2 red..... | 1 10 | to | — |
| Corn—White..... | — | to | 70 |
| No. 1..... | — | to | — |
| No. 2..... | — | to | 60 |
| Oats—No. 1..... | 39 | to | 40 |
| No. 2..... | 37 | to | 39 |
| Hay—Common..... | 12 00 | to | 14 00 |
| Loose pressed..... | 17 00 | to | 18 00 |
| Pork—City mess..... | 24 50 | to | 25 00 |
| Lard—Refined, in tierces..... | 15½ | to | 15½ |
| Butter—Choice Ohio..... | 33 | to | 35 |
| Fair to good..... | 25 | to | 33 |
| Cheese—Choice factory..... | 14½ | to | 15½ |
| Western Reserve..... | 13½ | to | 14 |
| Cotton—Low middling..... | 15 | to | 15½ |
| Middling..... | 15½ | to | 15½ |
| Tobacco—Com. lugs, West Va..... | 4 50 | to | 6 50 |
| Com. lugs, Ohio..... | 5 50 | to | 6 25 |

| | | | |
|------------------------------------|--------|----|--------|
| Tobacco—Com. lugs, Kentucky..... | \$7 00 | to | \$9 50 |
| Wool—Tub-washed..... | 45 | to | 48 |
| Fleece-washed, manufac-turing..... | 40 | to | 43 |
| Fleece-washed, combing..... | 42 | to | 45 |
| Unwashed, manufacting..... | 30 | to | 31 |
| Unwashed, combing..... | 32 | to | 35 |

ST. LOUIS.

| | | | |
|--------------------------------------|-------|----|-------|
| Flour—Spring..... | 4 10 | to | 4 35 |
| Winter..... | 3 60 | to | 4 85 |
| Choice..... | 5 25 | to | 6 50 |
| Wheat—No. 1..... | 1 28 | to | 1 32 |
| No. 2..... | 1 20 | to | 1 22 |
| No. 3..... | 1 06 | to | 1 14 |
| Choice..... | 1 40 | to | 1 45 |
| Corn—Mixed..... | 52 | to | 53 |
| Yellow..... | 60 | to | 62 |
| White..... | 65 | to | 68 |
| Oats—Mixed..... | 37½ | to | 38½ |
| Prime, in burlaps..... | 43 | to | — |
| Hay—Timothy, prime to choice..... | 17 00 | to | 20 00 |
| Pork—Mess..... | 25 25 | to | 25 50 |
| Lard..... | 16 | to | 17½ |
| Butter—Choice dairy..... | 33 | to | 35 |
| Medium..... | 18 | to | 22 |
| Cheese—Factory..... | 15½ | to | 16½ |
| New York..... | 16 | to | 16½ |
| Cotton—Middling..... | 15 | to | 15½ |
| Tobacco—Factory lugs..... | 5 00 | to | 6 25 |
| Planters' lugs..... | 6 75 | to | 8 50 |
| Wool—Tub-washed..... | 40 | to | 48 |
| Fleece-washed, (fine and light)..... | 35 | to | 40 |
| Unwashed, combing..... | 35 | to | 41 |
| Pulled..... | 30 | to | 32 |

NEW ORLEANS.

| | | | |
|---|-------|----|-------|
| Flour—Superfine..... | 5 00 | to | 5 12½ |
| Extras, (accord'g to g'de)..... | 5 70 | to | 8 25 |
| Corn—Mixed..... | 80 | to | 82 |
| Yellow..... | 90 | to | — |
| White..... | 83 | to | 90 |
| Oats—Choice..... | 53 | to | — |
| Hay—Choice..... | 29 00 | to | — |
| Prime..... | 27 00 | to | 28 00 |
| Pork—Mess..... | 26 75 | to | 27 00 |
| Lard—In tierces..... | 17 | to | 17½ |
| In kegs..... | 18½ | to | — |
| Butter—Choice western..... | 33 | to | 35 |
| Common..... | 30 | to | 35 |
| Cheese—Choice factory..... | 15 | to | 15½ |
| Western Reserve..... | 13½ | to | 14 |
| Cotton—Ordinary..... | 12 | to | 13 |
| Low middling..... | 15½ | to | 15½ |
| Middling..... | 15½ | to | 15½ |
| Tobacco—Not quoted..... | — | to | — |
| Wool—Quotations nominal for all grades..... | — | to | — |

SAN FRANCISCO.

| | | | |
|----------------------|-------|----|-------|
| Flour—State..... | 5 25 | to | 6 50 |
| Oregon..... | 5 25 | to | 6 50 |
| Wheat—State..... | 1 85 | to | 2 05 |
| Oregon..... | 2 00 | to | 2 05 |
| Corn—White..... | 1 25 | to | 1 30 |
| Yellow..... | 1 25 | to | 1 30 |
| Oats..... | 1 25 | to | 1 55 |
| Hay—State..... | 10 00 | to | 14 00 |
| Pork—Mess..... | 26 00 | to | 27 00 |
| Prime..... | 22 50 | to | 23 00 |
| Beef—Mess..... | 18 00 | to | 20 00 |
| Lard—In barrels..... | 13 | to | 14 |
| Butter—State..... | 40 | to | 65 |
| Oregon..... | 25 | to | — |
| Overland..... | 30 | to | 35 |
| Cheese..... | 12 | to | 18 |
| Wool—Native..... | 13 | to | 14 |
| Californian..... | 15 | to | 18½ |
| Oregon..... | 24 | to | 26 |

* Record made as near the first of the month as practicable.

THE SUGAR BEET IN ENGLAND.

Mr. Caird, in an account of the progress of the English beet-root sugar manufacture, states that the sugar made by Mr. Duncan, at Lavenham, in Suffolk, from beets grown by the farmers of that neighborhood, has brought the highest price in the market for sugar in crystals. Mr. Duncan is now converting into sugar about 400 tons of roots per week. This is the third year of the Lavenham factory and of the growth and manufacture of English beet-root sugar on a scale equal in extent to that of continental sugar factories. The analysis of the roots in the first two years showed the quality to be satisfactory, but chemical and mechanical means for extracting the sugar proved defective. There have been many other difficulties inseparable from a new undertaking, inexperienced hands not being the least, but perseverance and the exercise of great intelligence have triumphed, and the successful introduction of a new and profitable agricultural industry into England has been accomplished. Mr. Duncan has satisfied himself that the growth and manufacture of beet-root sugar can be carried on in Suffolk with quite as much success as in the north of France.

The total value of the sirup produced last year is £960. The expenditures, including cost of roots, government duty, and working expenses, do not exceed £660. So that there is a handsome balance for interest on capital and for profit, besides the value of the refuse pulp sold for cattle feed, and thus returned to the land. The roots are richer in sugar this year than usual, but, on the other hand, sugar is very cheap. The conversion of the roots into sugar has more than doubled their value, though purchased at a price more remunerative to the farmer than any other article he produces. The land is not impoverished, as nearly all the feeding properties of the beet are returned to it by being fed to cattle. The whole available surplus labor of an agricultural parish receives indoor employment in the sugar factory during three or four months of the slackest season, and at good wages. Capital is profitably employed, and trade of all kinds is benefited, while the general supply of sugar is augmented.

Mr. Campbell, of Buscot Park, Berkshire, is conducting a similar experiment on a large scale, so far as the growth of the beet is concerned, but with the intention of being able to convert the root either into sugar or spirit, as may at the time be most profitable. The weight and quality of the sugar beet grown on his estate this season cannot be surpassed. Thus, in Berkshire as in Suffolk, the soil and climate have proved equally suitable. There is no appreciable difference in the climate of the counties adjoining, and it is assumed that on all soils on which mangolds are now advantageously grown in the counties from the Wash to the English Channel, the sugar beet may be gradually introduced.

While Mr. Caird feels great confidence in the future profitable extension of this industry, he offers a word of warning. It did not pay Mr. Duncan the first or the second year. But the business is quite new in the country, and men are not yet educated to it. Enough has been done, however, to show that success may be anticipated by those who can bring to it a like command of capital, skill, and perseverance.

WIDE DRILLING AND TILLING WHEAT AND BARLEY.

In the autumn of 1868 the Cirencester (England) Chamber of Agriculture inaugurated a comparative trial between two or more methods of wheat culture. It was resolved to omit, in drilling, every alternate row, leaving a space of 18 inches between the rows; to omit two drills and leave two, leaving a space of 27 inches between double rows 9 inches apart; to omit two drills and leave two, forking the interspaces during the summer; and to attempt the cultivation of carrots or potatoes between the rows of wheat; and to try the effect of firmly pressing the land with the foot in winter and spring. In carrying out these experiments the wheat was in some cases sown with the drill in the usual manner, and the surplus obliterated by the hand-hoe soon after the blades appeared above the ground. In other cases the drill was set so as to deposit the seed at the required width. The object of these experiments was to show how far a free admission of air and light influences the growth of the wheat plant; how far interculture is beneficial or the reverse, and the effect of thin seeding. The results were as follows:

Plot with alternate rows obliterated and spaces forked produced at the rate of 29.6 bushels per acre; alternate rows obliterated and the remaining rows singled into tufts or bunches, 22.8 bushels; ordinary wheat for comparison, 30.8 bushels; three rows left and three hoed out, spaces forked, 25.2 bushels; alternate rows obliterated, spaces not forked, 28.4 bushels; alternate rows obliterated, remaining rows tufted, 24.4 bushels; three rows left and three obliterated, not forked, 26.8 bushels; alternate rows obliterated, spaces not forked, 28.4 bushels; three rows left and three hoed out, spaces forked, 20.4 bushels; ordinary wheat 29.2 bushels; three rows left and three hoed out, spaces forked, 23.2 bushels; alternate rows obliterated, spaces forked, 26 bushels.

In no case was the crop so good as on the plots cultivated in the usual way. Plots in which the alternate rows were obliterated were so nearly equal to those of ordinary wheat, that, since half the seed might have been saved by sowing with a wide drill, the advantage is pretty equal in both methods. The forked wheat was generally inferior to the corresponding unforked. Since 25 and 26 bushels per acre were obtained from half the land under crop in cases of plots 4 and 7, the question whether the interspaces would bear as large a crop of wheat the succeeding year is worthy of attention.

Experiments made upon barley at the Royal Agricultural College Farm, in 1868, during the same season, point to a clear advantage from wide drilling and interculture. Average product of three ordinary plots 31.6 bushels to the acre; average results of two plots, alternate rows obliterated, 40.7 bushels; average results of two plots, alternate rows obliterated, spaces forked, 42.7 bushels.

In 1869 the results of Earl Rathurst's experiments were as follows: Plot with two rows of wheat obliterated and two left, carrots sown between, forked, produced per acre, 1,700 pounds of grain, 2,560 pounds of straw, 240 pounds of cavings, and 360 pounds of chaff. Plot with two rows obliterated and two left, forked April 9 and June 7, produced per acre, 1,820 pounds of grain, 2,720 pounds of straw, 230 pounds of cavings, and 320 pounds of chaff. Plot with two rows obliterated and two left, 1,770 pounds of grain, 2,810 pounds of straw, 230 pounds of cavings, and 300 pounds chaff. Plot with ordinary treatment, 1,910 pounds of grain, 2,645 pounds of straw, 180 pounds of cavings, and 300 pounds chaff.

At the College Farm in 1869, the average of three unmanured and

untouched plots of wheat was 25 bushels to the acre. The plots where two rows had been alternately removed and left without interculture, except hoeing, gave respectively 60 and 80 pounds less grain per acre than unmanured and untouched plots; while two plots similarly treated, with the addition of forking between the rows, showed a decrease of 175 pounds and 165 pounds respectively, when compared with ordinary wheat. The potatoes planted between the rows of wide-drilled wheat were a complete failure.

The results on the farm of Mr. Smith, of Bibury, show that a plot with two drills nine inches apart, alternated with 27-inch spaces, potatoes between, produced at the rate of 3,200 pounds of wheat, and 4,260 pounds of straw per acre; plot with two drills omitted and two left, spaces forked twice, 3,020 pounds of grain, and 4,140 pounds of straw; plot with two drills omitted and two left, land pressed, 3,080 pounds of grain, and 4,340 pounds of straw; two drills taken and two left, land pressed, 3,280 pounds of grain, and 4,380 pounds of straw; untouched plot, 2,760 pounds of grain, and 3,500 pounds of straw. These results were so satisfactory to Mr. Smith that he has sown a larger area upon the same principle. Here the seed was at once drilled the required width, thus saving one bushel of seed per acre.

In experiments of Mr. W. J. Edmonds the plots, (one-twentieth of an acre,) with two rows removed and two left, averaged $58\frac{1}{2}$ pounds of grain; two rows removed and two left, spaces forked, 63 pounds; two rows removed and two left, spaces planted with potatoes, $64\frac{1}{2}$ pounds; plots firmly pressed with foot, $70\frac{1}{2}$ pounds; ordinary drilling, $100\frac{3}{4}$ pounds. These results are decidedly unfavorable to wide drilling and thin seeding, little more than half the yield being obtained from the wide-drilled plots.

Such are the results of wide drilling and interculture in the experiments named. In one case there was a remarkable increase of wheat and straw, in connection with a saving of one bushel of seed to the acre. A second case gave an increased amount of straw per acre, and was thought, up to harvest, to promise a greater yield of grain, but strict weighing revealed a deficiency, probably due to mildew. A third series gave a slightly diminished yield upon land which had borne a barley crop the preceding year, and was consequently in low condition. A fourth gave an unequivocal answer in favor of continuing the usual system. All the experiments agree in condemning deep interculture between wide-drilled wheat. Many corroborative answers, extending over three seasons, go far to prove that, in the district where these trials were made, deep interculture in the case of wheat is unnecessary.

With reference to barley the results obtained were certainly encouraging, and the system of wide-drilling will again be tested. In addition to the increase in grain in the case of barley and sowing of seed, the facility offered for working both hand and horse hoes must be looked upon as an additional advantage.

HOP-GROWING IN ENGLAND.

About 65,000 acres of land are cultivated in hops in England, and the area planted is annually increasing. Kent County is the most extensively engaged in the culture, the acreage this season reaching 33,000, the early grounds averaging 14 to 16 hundred weight per acre. Sussex cultivates 14,500 acres, and produced this year 18 to 22 hundred

weight per acre, but the crop was materially damaged by the gales of September, and many growths were imperfectly cured. Berks and Hants cultivated 3,300 acres, and the yield was 14 to 18 hundred weight per acre. Hertfordshire 6,000 and Worcestershire 3,800 acres; product from 15 to 18 hundred weight per acre. Surrey produces a choice quality of hops, celebrated for their bright color and superior aroma, and properties essential for brewing pale and bitter ale. In Farnham 1,100 acres are cultivated, and the average product this season was 14 to 16 hundred weight per acre. The other counties grow about 4,900 acres. The free importation of foreign hops into England and the large continental growths this season have decreased the value of domestic hops.

ITEMS FROM VARIOUS SOURCES.

PROFITABLE CULTURE.—In March 1869, Mr. C. A. Hutchinson, of Jacksonville, Florida, planted a plot, 50 feet square, with orange seed. In February next the plants were 12 to 18 inches high, when \$200 worth were sold at the rate of \$20 per hundred. The remainder were transplanted, and are now 2½ to 3 feet high, and occupy a space of 50 by 100 feet, and number about 8,000 plants. They are worth an average of \$30 per hundred in the market, making the product of the lot, within two years, \$2,600. The expense of seed and cultivation is estimated at about \$60.

BANANA CULTURE.—The cultivation of the banana is engaging considerable attention in the neighborhood of Palatka, Florida, and the river counties. Three years ago a gentlemen in Orange County set out nine plants, and is now reaping the fruits of a three-acre field, and realizes \$125 per month from the fruit and the young plants that are continually suckering around the roots of the old plants. The banana fruits in all seasons, the year round, and is fertilized by the shedding of its huge leaves.

CRANBERRIES.—It is stated that quite an impetus has been given to the sale of marsh lands in Washington Territory recently, by the advent of a New Jersey cranberry grower in quest of these valuable lands. The Oregon Statesman says there is a large marsh near Gray's Harbor, in that State, which is already covered with cranberry bushes growing wild, and yielding considerable fruit, which is picked and sold by the Indians. This marsh has been purchased of the Government by several gentlemen of Salem, New Jersey.

CALIFORNIA WINES.—It is estimated that 700,000 to 800,000 gallons of red and white wine have been made in Anaheim, Los Angeles County, California, this season, and of a better quality than the product of any preceding year. The amount is 250,000 gallons in excess of the yield of any previous season. It is claimed that, owing to the fine weather and the extra condition of the grapes, this wine is already so thoroughly fermented that it will be in a marketable condition in sixty days. Preparations are being made for the immediate setting out of 300 to 400 additional acres of vines. From 300 to 400 boxes of Malaga grape raisins have been made this year, as an experiment, and are said to be of unusual size and flavor, and superior to any in the market. Don Mateo Keller, one of the largest wine-makers of Los Angeles, has expressed 100,000 gallons of the pure juice this season.

The San Francisco Commercial Herald states that the total shipments

of domestic wines from that port to New York from the beginning of 1868 to about the 1st of July of the current year, were 848,637 gallons of all grades. Of this quantity the United Anaheim Wine-Growers' Association shipped 237,600 gallons. G. Groezinger's shipments averaged \$40,000 per annum, and the proportions were two-thirds white or hock, and one-third port, angelica, sherry, muscatel, &c. The usual prices charged were, for white or hock, 50 to 70 cents per gallon; port, \$1 25 to \$1 50; angelica, \$1 to \$1 25; sweet muscatel, \$1 to \$1 50; sherry, \$1 to \$1 50. I. Landsberger & Co. shipped 2,500 cases of champagne, 4,000 cases and 40,000 gallons assorted, besides 250 cases of wine bitters. Kohler & Frohling shipped about 120,000 gallons. The Lake Vineyard Wine Company consigned 45,577 gallons of port, 24,826 gallons of angelica, 40,353 gallons of white, 31,147 gallons of claret, 4,071 gallons of sherry, 8,758 gallons of grape brandy, &c. There were several smaller shippers whose consignments are included in the grand total above given.

CALIFORNIA COTTON.—A scientific expert in cotton states that the cotton grown from Alabama seed in Merced County, California, this year, compares favorably with Brazilian and Egyptian cotton, and is superior to the best southern upland for spinning purposes. He asserts that the effects of the dry and equable climate of California is an improvement in the staple yielded from the same seed as planted upon southern uplands. There are large sections of the State well adapted to this culture.

CHINESE IMMIGRATION.—According to data on record there were but 11 arrivals of Chinamen in this country between 1820 and 1840, and only 35 in the following decade. From 1851 to 1860 there were 41,397, and from 1861 to 1868 there were 41,214 arrivals. In 1869 there were 14,902, and for the first six months of the current year, 7,349. The aggregate thus far, 105,744. Allowing for deaths and for those returned to China, it would appear that there are now considerably less than 100,000 Chinamen in this country. The rate of increase for the last four years has been as follows: in 1867 the number was 3,519; in 1868, 6,707; in 1869, 12,874; and in 1870, 15,740. The total arrivals of females to June 30, 1870, were 2,144.

A SUGGESTIVE EXPERIMENT.—One of the largest wheat-growers in California has avoided the expense of commission, tolls, storage, &c., by shipping his wheat direct to Liverpool. He chartered a ship which was hauled in at the end of the Central Pacific Railroad wharf at Oakland, and in a few hours 1,200 tons of grain were brought alongside and stowed, and the vessel returned to the stream ready for her voyage, without having incurred any wharfage charges.

THE GREAT WYOMING COAL BELT.—We continue to receive favorable accounts of the immense undeveloped coal-fields of Wyoming Territory, extending along the line of the Pacific Railroad a distance of about three hundred miles. One vein has been opened and worked during the past season, and the product is said to compare favorably with that of any western mine now in operation. It is claimed that it is a better article than Lehigh coal for making steam, for domestic use, for locomotive and for smelting purposes, and for gas manufacture. In the hills north and east of these vast coal deposits are layers of clay, iron, and stone, yielding about 30 per cent. of metallic iron. The ore is remarkable for the large amount of lime it contains, which obviates the necessity of using other flux, and leaves the ore in an unusually porous and fusible condition by means of the expulsion of carbonic acid gas in such great quantities. A few miles further east, and on the Weber

River, a few miles west, deposits of magnetic ore have been found. The existence of unlimited quantities of coal and iron in such close proximity promises to make this region the seat of a great iron manufacturing industry in future years.

ANALYSIS OF WHEAT.—O. S. Hubbell, M. D., a distinguished pharmacist of Philadelphia, furnishes the following analysis of the flour and bran which he receives from the mill to which he sends his wheat for grinding. From every 100 pounds of wheat about 76 pounds of flour and 20 pounds of bran. The flour contains of tissue-making elements, (gluten, albumen, &c.,) 1.65; of phosphates and other salines, 0.70; total, 2.35 per cent. The bran contains, of tissue-making elements, 3.10; salines, phosphates, &c., 7.05; total, 10.15 per cent. That is, for purposes of nutrition, the bran is more than fourfold richer than the flour, or (being one-fourth the weight of the flour) it has as much value as the flour itself. Wheaten flour of the miller consists chiefly of wheaten starch, while the flesh-forming element of the grain, with the blood and bone-producing constituents are chiefly rejected in the bran, and are seldom used for human food, through traditional ignorance and prejudice; while wheat flour is doubly nutritious, and can be eaten only in diminished quantity, or surfeit will be the result.

TOBACCO IN OHIO.—It is estimated that the tobacco crop of the Miami Valley this year will reach 12,000,000 pounds. The quality of the product is thought to nearly equal that of the Connecticut gold-leaf. A large portion has been sold at 17 cents per pound, at which rate the crop would realize \$2,040,000. The average value of the crop per acre is over \$200. Nearly three-fourths of the whole product was grown in Montgomery County.

BEET SUGAR IN FRANCE.—Notwithstanding the scourge of war the principal beet sugar districts of France have manufactured 38 per cent. more sugar this year than in the seasons of 1868-'69. The season has been admirable for the growth of the beet. The circular of Arnold, Baruchson & Co., Liverpool, England, reports the product in the various departments of France as follows: Aisne, 60,871 tons; Nord, 88,316 tons; Oise, 20,470 tons; Pas de Calais, 42,946 tons; Somme, 32,930 tons; other departments, 28,699 tons. Total, 274,232 tons, against 198,718 tons the preceding year.

THE CUBAN SUGAR CROP.—Alfonso & Blanchard's circular (Matanzas, November 4) states that, with regard to the injury done to the sugar-cane for the next crop by the great hurricane of October, there is much difference of opinion among planters, but that the majority agree on an average of 25 to 30 per cent. Much of the cane, from being whirled, has been broken at the root, and in some districts completely inundated, which may produce total rottenness. The sugar estates have suffered more or less from destruction of buildings, machinery, and implements, and the aggregate loss is heavy.

INCREASE OF FARMS IN CALIFORNIA.—The number of acres of land assessed in Fresno County, California, for the present year, is 1,344,079. In 1860 there were in the county 3,770 acres of improved land in farms, and 19,431 acres of unimproved land in farms, the total value of which was \$118,140.

TREATMENT OF WOOD IN PAPER MANUFACTURE.—The wood, previously reduced to shavings or sawdust, is placed for a time (the duration of which depends upon the nature and state of division of the wood) into water, being left there to rot, as is done with flax. By this treatment a great many substances are removed from the wood, which is thereby afterward more readily pulped. The rotting in water has the

effect of disintegrating and partly decomposing the nitrogenous and incrusting matter of the wood, which is also afterward more readily bleached, not becoming yellow by the use of chlorine, as is the case when these matters have been left in the wood. The rotted wood is thoroughly washed with boiling water and steamed, previous to any other treatment, and next treated with an alkali.

BAT GUANO.—The excrements of bats from Egypt have recently become an article of trade as a sort of guano for manurial purposes. An analysis of the composition shows in 100 parts, urea, 77.80; uric acid, 1.25; kreatine, 2.55; phosphate of soda, 13.45; water driven off at 100° centigrade, 3.66; substances insoluble in water, 0.575—total 99.285.

CATTLE DISEASE IN NEW YORK.—The farmers of Dutchess County, New York, are excited over the appearance among their cattle of a peculiar disease. It appears that thirteen steers and a pair of oxen were brought after sunset into Pawling, and kept in one of the cattle yards over night. The next day the oxen were sold to a neighboring farmer. About four days after being taken to their new home the oxen were taken suddenly sick, their tongues commenced to swell, water ran from their mouths, their hoofs began to rot, and their appetite vanished. Though not considered in a critical condition, they were apparently failing daily. Soon after it was noticed that their ailments had been imparted to other cattle on the farm, and now thirty-one head are afflicted in the same manner, most of them milch cows. Cattle on the neighboring farms are also down with the disease, and to all appearances the malady is spreading fast, and threatens to produce disastrous results.

THE CATTLE PLAGUE IN GERMANY.—Information has been received at the veterinary department of the privy council, England, that the cattle plague is raging in many parts of Germany and France, and that, in consequence of the war on the continent, all efforts to check it in the various provinces of Germany appear to have failed, while in France it is reported to have accompanied the German army from the vicinity of Metz to Paris. Orders have been issued by the lords of the council adding France to the list of suspected countries, and subjecting sheep and goats from Germany and France to the same restrictions as are imposed upon cattle coming from those countries; and further requiring that all such cattle, sheep, and goats coming to London shall be slaughtered at the place of landing, instead of being brought to the metropolitan market. The governments of Belgium and the Netherlands are strictly guarding their frontiers and seaboard against the introduction of animals from Germany and France.

OCTOBER, 1870.

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and the amount of rain-fall, (in inches and tenths,) for October, 1870, as reported by the observers and at the stations named. Observations daily at 7 a. m. and 2 and 9 p. m.

| State and station. | County. | Observer. | Date. | Maximum temperature. | Date. | Minimum temperature. | Mean temperature. | Rain and melted snow. |
|------------------------|--------------------|-------------------------------|-----------|----------------------|-------|----------------------|-------------------|-----------------------|
| MAINE. | | | | | | | | |
| Houlton | Aroostook | C. H. Fernald | 3 | 80 | 27 | 17 | 46.9 | 6.60 |
| Orono | Penobscot | M. C. Fernald | 2 | 69 | 27 | 21 | 47.3 | 5.53 |
| Mt. Desert | Hancock | J. D. Parker | | | | | | 4.40 |
| Williamsburg | Piscataquis | Edw. Pitman | 2 | 68 | 27 | 20 | 45.9 | 6.90 |
| West Waterville | Kennebec | B. F. Wilbur | 25 | 78 | 27 | 27 | 50.3 | 5.36 |
| Gardiner | do | R. H. Gardiner | 2 | 69 | 27 | 26 | 49.7 | 6.39 |
| Lisbon | Androscoggin | Asa P. Moore | 2 | 76 | 27 | 20 | 49.4 | 5.55 |
| Norway | Oxford | H. D. Smith | 2 | 74 | 27 | 22 | 48.5 | 3.25 |
| Cornish | York | Silas West | 2 | 72 | 27 | 22 | 49.1 | 3.85 |
| Cornishville | do | G. W. Guptill | 17 | 73 | 27 | 24 | 50.9 | 7.20 |
| Averages | | | | | | | 48.7 | 5.50 |
| NEW HAMPSHIRE. | | | | | | | | |
| Stratford | Coos | Branch Brown | 2, 16 | 70 | 27 | 20 | 45.5 | 4.47 |
| Whitefield | do | L. D. Kidder | 16 | 71 | 27 | 16 | 46.2 | 3.70 |
| Tamworth | Carroll | A. Brewster | 16, 25 | 71 | 27 | 10 | 47.5 | 5.59 |
| Salisbury | Merrimaek | E. D. Couch | 16 | 75 | 27 | 19 | 49.8 | ..... |
| Goffstown Center | do | Alfred Colby | 10 | 79 | 27 | 24 | 52.5 | 3.89 |
| Averages | | | | | | | 48.3 | 4.41 |
| VERMONT. | | | | | | | | |
| Lunenburg | Essex | H. A. Cutting | 12 | 79 | 27 | 17 | 46.7 | 3.00 |
| Craftsbury | Orleans | E. P. Wild | 12 | 67 | 19 | 27 | 44.4 | 5.67 |
| Newport | do | J. M. Currier | 2, 16 | 70 | 27 | 22 | 47.2 | 5.50 |
| Randolph | Orange | C. S. Paine | 12, 16 | 71 | 27 | 20 | 48.7 | 4.68 |
| Woodstock | Windser | H. Doton & L. H. Miller | 2, 16 | 68 | 27 | 18 | 45.4 | 3.80 |
| Near St. Albans | Franklin | A. H. J. Gilmour | 16 | 70 | 27 | 24 | 48.0 | 5.50 |
| West Charlotte | Chittenden | Minerva E. Wing | 12 | 74 | 27 | 28 | 52.1 | 5.84 |
| Panton | Addison | D. C. and M. E. Barto | 2 | 69 | 27 | 25 | 44.1 | 5.25 |
| Castleton | Rutland | Rev. R. G. Williams | 16 | 72 | 27 | 24 | 49.6 | 3.34 |
| Averages | | | | | | | 47.9 | 4.73 |
| MASSACHUSETTS. | | | | | | | | |
| Lawrence | Essex | J. Fallon | | | | | | 5.35 |
| Kingston | Plymouth | G. S. Newcomb | 1 | 74 | 30 | 39 | 54.3 | 8.25 |
| Milton | Norfolk | Rev. A. K. Teele | 16 | 79 | 30 | 30 | 54.6 | 3.94 |
| Cambridge | Middlesex | Mrs. S. H. Perry | 1 | 76 | 27 | 29 | 55.3 | ..... |
| North Billerica | do | Rev. E. & W. W. Nason | 16 | 74 | 24 | 25 | 52.8 | ..... |
| West Newton | do | J. H. Bixby | 1 | 82 | 30 | 29 | 56.0 | 6.46 |
| New Bedford | Bristol | Samuel Rodman | 1 | 77 | 27 | 29 | 54.0 | 6.42 |
| Worcester | Worcester | D. T. Morrill | 1 | 72 | 27 | 28 | 52.0 | 5.89 |
| Lunenburg | do | G. A. Cunningham | 1 | 74 | 27 | 26 | 52.8 | 6.95 |
| Amherst | Hampshire | Prof. E. S. Snell | 2 | 71 | 27 | 26 | 52.1 | 4.49 |
| Richmond | Berkshire | William Bacon | 15, 16 | 70 | 27 | 26 | 52.4 | 6.55 |
| Williamstown | do | Prof. Albert Hopkins | 2, 16, 25 | 70 | 27 | 24 | 49.6 | 4.30 |
| Averages | | | | | | | 53.3 | 5.86 |

Table showing the highest and lowest range of the thermometer, &c.--Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tem- perature. | Rain and melted snow. |
|------------------------|-------------------|-----------------------------|--------|---------------------------|--------|---------------------------|------------------------|--------------------------|
| RHODE ISLAND. | | | | | | | | |
| Newport..... | Newport..... | W. A. Barber..... | 1 | 79 | 27 | 29 | 56.6 | 5.88 |
| CONNECTICUT. | | | | | | | | |
| Columbia..... | Tolland..... | W. H. Yeomans..... | 1 | 80 | 27 | 28 | 55.1 | 4.15 |
| Middletown..... | Middlesex..... | Prof. John Johnston..... | 1, 5 | 76 | 25 | 24 | 53.8 | 4.10 |
| Southington..... | Hartford..... | Luman Andrews..... | 1 | 73 | 27 | 30 | 53.4 | 4.32 |
| Colebrook..... | Litchfield..... | Charlotte Rockwell..... | 16 | 72 | 27 | 24 | 50.5 | 6.60 |
| Brookfield..... | Fairfield..... | Rev. S. W. Roe..... | 4 | 79 | 27 | 32 | 55.6 | 5.26 |
| Averages..... | | | | | | | 53.7 | 5.54 |
| NEW YORK. | | | | | | | | |
| Moriches..... | Suffolk..... | E. A. Smith & daughter..... | 1 | 75 | 30 | 30 | 51.5 | 3.76 |
| South Hartford..... | Washington..... | G. M. Ingalsbe..... | 16 | 76 | 27 | 25 | 53.8 | 2.95 |
| Gardwell..... | Warren..... | A. M. Strong..... | 2, 16 | 72 | 27 | 19 | 49.8 | 8.45 |
| Garrison's..... | Putnam..... | T. B. Arden..... | 4 | 51 | 27 | 23 | 52.3 | 5.26 |
| Throg's Neck..... | West Chester..... | Miss E. Morris..... | 1 | 80 | 27 | 37 | 58.7 | ..... |
| White Plains..... | West Chester..... | Prof. O. R. Willis..... | 1 | 74 | 30 | 31 | 56.0 | ..... |
| Cooper Union..... | New York..... | Prof. O. W. Morris..... | 1 | 77 | 30 | 36 | 58.4 | 5.12 |
| Brooklyn..... | Kings..... | L. P. Mailler..... | 1 | 82 | 27 | 36 | 58.5 | 5.66 |
| Albanyville..... | Montgomery..... | J. W. Bussing..... | 2, 25 | 72 | 30 | 27 | 52.8 | 1.96 |
| Cooperstown..... | Otsego..... | G. P. Keese..... | 16, 17 | 72 | 39 | 23 | 49.9 | 3.80 |
| Gouverneur..... | St. Lawrence..... | C. H. Russell..... | 2 | 71 | 30 | 22 | 48.3 | 3.68 |
| North Hammond..... | St. Lawrence..... | C. A. Wooster..... | 2 | 78 | 27 | 32 | 54.9 | 6.72 |
| Houseville..... | Lewis..... | W. D. Yale..... | 2, 16 | 72 | 33 | 26 | 49.2 | 4.99 |
| Utica..... | Oneida..... | J. G. Williams..... | 16 | 73 | 30 | 27 | 52.1 | 4.56 |
| South Trenton..... | Oneida..... | Storrs Barrows..... | 17 | 78 | 30 | 24 | 51.9 | 8.00 |
| Cazenovia..... | Madison..... | Prof. William Soule..... | 16 | 71 | 30 | 27 | 49.7 | ..... |
| Depauville..... | Jefferson..... | Henry Haas..... | 2 | 75 | 30 | 28 | 50.1 | 3.98 |
| Oswego..... | Oswego..... | William S. Malcolm..... | 16 | 69 | 30 | 32 | 51.6 | 4.98 |
| Padermo..... | Oswego..... | E. B. Bartlett..... | 2 | 72 | 30 | 27 | 49.9 | 2.20 |
| North Volney..... | Oswego..... | J. M. Patrick..... | 16 | 77 | 30 | 29 | 53.8 | ..... |
| Waterburg..... | Tompkins..... | David Trowbridge..... | 12 | 72 | 30 | 20 | 48.3 | ..... |
| Nichols..... | Tioga..... | Robert Howell..... | 16 | 75 | 30 | 23 | 50.4 | ..... |
| Newark Valley..... | Tioga..... | Rev. Samuel Johnson..... | 16 | 74 | 30 | 24 | 50.4 | 3.80 |
| Himrod's..... | Yates..... | G. D. Baker..... | 16 | 71 | 30 | 28 | 44.7 | 1.06 |
| Little Genesee..... | Allegany..... | Daniel Edwards..... | 16 | 74 | 30 | 25 | 49.2 | 2.13 |
| Suspension Bridge..... | Niagara..... | W. Martin Jones..... | 16 | 74 | 30 | 36 | 52.2 | 3.25 |
| Lockport..... | Niagara..... | B. W. Clark..... | 24 | 78 | 19, 30 | 34 | 52.1 | 2.29 |
| Buffalo..... | Erie..... | William Ives..... | 16 | 75 | 19 | 31 | 52.4 | 4.58 |
| Averages..... | | | | | | | 51.9 | 4.25 |
| NEW JERSEY. | | | | | | | | |
| Paterson..... | Passaic..... | William Brooks..... | 1 | 77 | 27, 30 | 32 | 54.9 | 4.84 |
| Newark..... | Essex..... | W. A. Whitehead..... | 1 | 76 | 27 | 32 | 55.4 | 4.77 |
| South Orange..... | Essex..... | W. J. Chandler, M. D..... | 1 | 78 | 27 | 30 | 55.2 | 5.64 |
| Trenton..... | Mercer..... | E. R. Cook..... | 1 | 80 | 27 | 37 | 59.8 | 5.23 |
| Rio Grande..... | Cape May..... | Mrs. J. R. Palmer..... | 4 | 79 | 23 | 40 | 57.8 | 3.12 |
| Moorestown..... | Burlington..... | T. J. Beans..... | 1 | 76 | 23 | 34 | 56.0 | 4.82 |
| New Germantown..... | Hunterdon..... | A. B. Noll..... | 1, 12 | 77 | 27 | 33 | 54.8 | 4.86 |
| Readington..... | Hunterdon..... | John Fleming..... | 15 | 76 | 30 | 30 | 55.5 | ..... |
| Haddonfield..... | Camden..... | John Boodle..... | 1 | 77 | 30 | 34 | 55.5 | 3.78 |
| Greenwich..... | Cumberland..... | Miss R. C. Sheppard..... | 1 | 78 | 19 | 38 | 57.4 | 1.92 |
| Vineland..... | Cumberland..... | John Ingram, M. D..... | 1 | 81 | 19, 30 | 36 | 57.3 | 3.05 |
| Averages..... | | | | | | | 56.3 | 4.21 |
| PENNSYLVANIA. | | | | | | | | |
| Nyces..... | Pike..... | John Grathwohl..... | 9, 16 | 73 | 30 | 25 | 49.3 | 2.40 |
| Hamilton..... | Wayne..... | J. D. Stocker..... | 16 | 75 | 27 | 29 | 51.3 | 3.60 |
| Fallsington..... | Bucks..... | Ebenezer Hanco..... | 1 | 79 | 27, 30 | 37 | 57.0 | 4.50 |
| Philadelphia..... | Philadelphia..... | J. A. Kirkpatrick..... | 1 | 79 | 27 | 39 | 59.3 | 4.11 |
| Germantown..... | Philadelphia..... | Thomas Meehan..... | 12 | 79 | 19 | 38 | 55.7 | ..... |
| Germantown..... | Philadelphia..... | Ernest Turner..... | 1 | 78 | 19 | 39 | 55.4 | 2.25 |
| Horsham..... | Montgomery..... | Miss Anna Spencer..... | 1 | 76 | 30 | 36 | 55.4 | 6.41 |
| Plymouth Meeting..... | Montgomery..... | M. H. Corson..... | 1 | 77 | 30 | 35 | 55.8 | 6.02 |
| Egypt..... | Lehigh..... | E. Kohler..... | 1 | 78 | 30 | 29 | 54.6 | ..... |
| North Abington..... | Luzerne..... | R. Sisson..... | 12 | 74 | 30 | 22 | 50.2 | 4.09 |
| Reading..... | Berks..... | J. H. Raser..... | 1 | 76 | 30 | 36 | 57.2 | 3.00 |

Table showing the highest and lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum temperature. | Date. | Minimum temperature. | Mean temperature. | Rain and melted snow. |
|----------------------|------------------|----------------------------|----------------------|----------------------|--------|----------------------|-------------------|-----------------------|
| SOUTH CAROLINA. | | | | | | | | |
| Aiken | Barnwell | J. H. Cornish | 23, 29 | 80 | 20 | 49 | 65.8 | 4.40 |
| Bluffton | Beaufort | J. St. J. Guerard, M. D. . | 12 | 86 | 21, 22 | 56 | 71.6 | 8.40 |
| Averages | | | | | | | 68.7 | 6.40 |
| GEORGIA. | | | | | | | | |
| Berne | Camden | H. L. Hillyer | 3 | 79 | 21 | 47 | 66.1 | 5.05 |
| St. Mary's | do | Ebenezer Barker | 3, 31 | 81 | 21 | 50 | 70.2 | ..... |
| Penfield | Greene | J. P. Sanford | 29 | 82 | 21 | 41 | 64.7 | 2.77 |
| Atlanta | Fulton | C. Deckner | 23 | 76 | 13 | 46 | 61.5 | 0.10 |
| Averages | | | | | | | 65.6 | 2.64 |
| ALABAMA. | | | | | | | | |
| Rockville | Jefferson | Miss E. B. Shields | { 27, 28 } 29, 30 | 78 | 21 | 40 | 64.2 | 1.37 |
| Carlowville | Dallas | H. L. Alison | 19 | 84 | 21 | 47 | 66.9 | 0.57 |
| Greene Springs | Hale | H. Tutwiler, LL. D. . | 19 | 82 | 21 | 41 | 64.8 | 0.30 |
| Coatopa | Sumter | S. K. Jennings, M. D. . | 19 | 86 | 14 | 42 | 65.0 | 1.80 |
| Averages | | | | | | | 65.2 | 1.01 |
| FLORIDA. | | | | | | | | |
| Port Orange | Volusia | S. N. Chamberlin | 1, 2 | 84 | 21 | 55 | 74.2 | 13.16 |
| St. Augustine | St. John's | George W. Atwood | 5 | 88 | 21 | 54 | 75.6 | ..... |
| Jacksonville | Duval | A. S. Baldwin, M. D. . | 3 | 87 | 21 | 52 | 73.0 | 7.10 |
| Pilatka | Putnam | G. D. Robinson | 5, 12 | 90 | 21 | 52 | 74.7 | 4.32 |
| Orange Grove | Manatee | W. J. Clark | 11 | 88 | 21 | 57 | 75.8 | 9.75 |
| Newport | Walulla | Charles Beecher | 11 | 83 | 14, 22 | 48 | 68.0 | 2.45 |
| Averages | | | | | | | 73.6 | 7.36 |
| TEXAS. | | | | | | | | |
| Clarksville | Red River | John Anderson | 29 | 89 | 20 | 50 | 69.7 | ..... |
| Gilmer | Upshur | J. M. Glasco | 2, 4 | 87 | 20 | 43 | 68.2 | 3.71 |
| Palestine | Anderson | N. S. Brooks | 3 | 89 | 20 | 48 | 71.5 | 6.70 |
| Oakland | Colorado | F. Simpson | 3, 5, 11, 27 | 88 | 19 | 54 | 72.4 | 7.64 |
| Blue Branch | Burleson | F. S. Wade | 4 | 84 | 20 | 44 | 68.7 | 10.00 |
| Bluff | Fayette | J. Rietsam | 15 | 88 | 20 | 48 | 72.1 | 6.50 |
| Clinton | De Witt | A. C. White | 2, 4 | 88 | 20 | 47 | 70.8 | 4.44 |
| Austin | Travis | J. Van Nostrand | 5, 27 | 86 | 20 | 47 | 68.2 | 12.63 |
| San Antonio | Bexar | Fred. Pettersen, M. D. . | 5 | 90 | 20 | 43 | 70.8 | 5.60 |
| Averages | | | | | | | 70.3 | 7.15 |
| LOUISIANA. | | | | | | | | |
| New Orleans | New Orleans .. | R. W. Foster | 16 | 84 | 21, 22 | 49 | 68.0 | ..... |
| Shreveport | Bossier | J. H. Carter | 5 | 85 | 14, 20 | 44 | 66.1 | ..... |
| MISSISSIPPI. | | | | | | | | |
| Columbus | Lowndes | James S. Lull | 27, 28 | 81 | 21 | 40 | 64.4 | 1.01 |
| Philadelphia | Neshoba | L. A. Bowden | 28, 29 | 78 | 20, 21 | 45 | 64.5 | 2.10 |
| Grenada | Grenada | J. S. Payne | 3, 18, 23 | 80 | 13, 21 | 38 | 62.9 | 0.95 |
| Near Brookhaven .. | Lawrence | Mrs. W. E. A. Keenan . | 23 | 89 | 20 | 36 | 63.3 | 1.40 |
| Averages | | | | | | | 64.3 | 1.37 |
| ARKANSAS. | | | | | | | | |
| Helena | Phillips | O. F. Russell | 29 | 87 | 21, 31 | 42 | 63.7 | ..... |
| Mineral Springs .. | Hempstead | Harmon Bishop | 23 | 86 | 21 | 40 | 63.2 | 2.13 |
| Fayetteville | Washington .. | Charles L. McClung .. | 27, 28 | 82 | 20 | 37 | 61.8 | 3.74 |
| Averages | | | | | | | 62.6 | 2.94 |

Table showing the highest and lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tem- perature. | Rain and melted snow. |
|--------------------|------------|--------------------------------|-----------------------|---------------------------|------------|---------------------------|------------------------|--------------------------|
| TENNESSEE. | | | | | | | | |
| Elizabethton | Carter | C. H. Lewis | 27 | 78 | 21 | 32 | 57.8 | 3.17 |
| Lookout Mountain | Hamilton | Rev. C. F. P. Bancroft | 29 | 81 | 20 | 42 | 61.9 | 1.89 |
| Clearmont | Warren | T. P. Wright | 27 | 79 | 21 | 37 | 59.1 | 3.64 |
| Austin | Wilson | P. B. Calhoun | { 1, 3, 6, 7, 28 } | 80 | 14 | 36 | 60.6 | 2.15 |
| Clarksville | Montgomery | Prof. W. M. and Miss Stuart | 27 | 82 | 22 | 42 | 60.2 | 5.80 |
| Trenton | Gibson | W. T. Grigsby | 27 | 90 | 13, 21 | 41 | 63.5 | 0.70 |
| La Grange | Fayette | W. E. Franklin, M. D. | { 26, 27, 28 } | 84 | 20, 21 | 44 | 64.4 | 2.89 |
| Averages | | | | | | | 61.1 | 2.89 |
| KENTUCKY. | | | | | | | | |
| Pine Grove | Clark | Dr. S. D. Martin | 27 | 76 | 21, 22, 31 | 38 | 56.8 | 2.24 |
| Shelby City | Boyle | Howard Shriver | 1 | 76 | 14, 21 | 41 | 58.0 | 2.48 |
| Near Louisville | Jefferson | Mrs. L. Young | 27 | 81 | 22 | 37 | 59.8 | 3.89 |
| Averages | | | | | | | 58.2 | 2.87 |
| OHIO. | | | | | | | | |
| Salem | Columbiana | Rev. J. E. Pollock | 27 | 76 | 19, 31 | 33 | 52.5 | 2.35 |
| Steubenville | Jefferson | Joseph B. Doyle | 16, 17, 27 | 70 | 19 | 36 | 55.7 | 1.90 |
| Painesville | Lake | E. J. Ferriss | 27 | 72 | 19, 21, 31 | 40 | 53.9 | 9.13 |
| Cleveland | Cayuhoga | Mr. & Mrs. G. A. Hyde | 16, 27 | 73 | 18, 22 | 37 | 53.8 | 5.36 |
| Wooster | Wayne | Martin Winger | 16, 24 | 80 | 19 | 30 | 54.6 | 2.37 |
| Adams' Mills | Muskingum | Charles A. Stillwell | 27 | 77 | 14 | 32 | 55.3 | 1.20 |
| Pennsville | Morgan | T. J. Bingman | 27, 28 | 74 | 22 | 37 | 58.8 | 3.35 |
| Oberlin | Lorain | L. Herrick | 16 | 76 | 18, 31 | 32 | 53.1 | 3.13 |
| Kelley's Island | Erie | G. C. Huntington | 16 | 73 | 18 | 41 | 57.8 | 4.64 |
| Sandusky | do | Thomas Neill | 16 | 75 | 19 | 39 | 55.7 | 2.90 |
| Carson | Huron | Mrs. M. M. Marsh | 16 | 72 | 31 | 38 | 55.6 | 3.45 |
| North Fairfield | do | O. Burras | 24 | 76 | 18, 31 | 38 | 55.6 | 2.70 |
| Gambier | Knox | F. K. Dunn | 27 | 70 | 23 | 34 | 52.7 | 2.77 |
| Westerville | Franklin | Prof. John Haywood | 27 | 76 | 31 | 33 | 54.8 | 3.75 |
| Williamsport | Pickaway | John R. Wilkinson | 10, 28 | 84 | 23 | 30 | 57.7 | 3.59 |
| North Bass Island | Ottawa | Geo. R. Morton, M. D. | 16 | 76 | 31 | 41 | 57.3 | 2.84 |
| Marion | Marion | H. A. True, M. D. | 16 | 74 | 29 | 36 | 53.1 | 2.32 |
| Hillsboro | Highland | J. McD. Mathews | 27 | 74 | 31 | 39 | 55.2 | 4.85 |
| Bowling Green | Wood | John Clarke | 16 | 82 | 31 | 36 | 56.5 | 4.70 |
| Kenton | Hardin | C. H. Smith, M. D. | 3 | 70 | 30, 31 | 37 | 51.8 | 3.86 |
| Bellefontaine | Logan | William Barringer | 16 | 74 | 31 | 33 | 53.7 | 4.00 |
| Urbana University | Champaign | Milo G. Williams | 27 | 75 | 29, 31 | 34 | 54.9 | 1.38 |
| Bethel | Clermont | George W. Crane | 27 | 78 | 31 | 37 | 54.4 | 2.70 |
| Carthage | Mercer | Dr. R. Mueller | 25 | 75 | 29 | 33 | 55.7 | 3.30 |
| Jacksonburg | Butler | Dr. I. B. Owsley | 17 | 76 | 31 | 38 | 57.7 | 2.67 |
| Mount Auburn | Hamilton | J. H. White | 16 | 76 | 31 | 39 | 58.8 | 2.77 |
| Cincinnati | do | G. W. Harper | 16 | 77 | 31 | 38 | 58.1 | 3.23 |
| Do. | do | R. C. Phillips | 1 | 78 | 31 | 39 | 59.0 | 3.69 |
| College Hill | do | John W. Hammitt | 1, 2 | 84 | 19, 20, 31 | 42 | 60.0 | 3.39 |
| Averages | | | | | | | 55.6 | 3.39 |
| MICHIGAN. | | | | | | | | |
| Detroit | Wayne | F. W. Higgins | 16 | 77 | 31 | 31 | 53.8 | 3.73 |
| Monroe | Monroe | Miss H. I. Whelpley | 16 | 82 | 31 | 38 | 51.1 | 3.53 |
| Ann Arbor | Washtenaw | Prof. & Mrs. Winchell | 16, 24, 27 | 72 | 18 | 34 | 52.2 | 4.20 |
| Alpena | Alpena | J. W. Paxton | 1, 2 | 70 | 31 | 35 | 51.8 | 5.98 |
| Litchfield | Hillsdale | R. Bullard | 24 | 72 | 29 | 32 | 51.8 | 4.75 |
| Cold Water | Branch | N. L. Southworth | 3 | 76 | 18 | 18 | 52.7 | 4.84 |
| Grand Rapids | Kent | L. H. Streng | 24 | 73 | 29 | 31 | 52.6 | 5.07 |
| Do. | do | E. S. Holmes, D.D.S. | 7 | 80 | 29 | 33 | 53.0 | 8.00 |
| Northport | Leelenaw | Rev. Geo. N. Smith | 1 | 74 | 31 | 35 | 51.4 | 2.80 |
| Copper Falls | Keweenaw | S. H. Whittlesey | 2 | 73 | 26 | 29 | 42.7 | 4.77 |
| Ontonagon | Ontonagon | Edwin Ellis, M.D. | 2 | 70 | 25, 26, 29 | 34 | 48.9 | |
| Averages | | | | | | | 51.1 | 4.77 |
| INDIANA. | | | | | | | | |
| Aurora | Dearborn | Geo. Sutton, M.D. | 25 | 80 | 31 | 36 | 57.3 | 3.57 |

Table showing the highest and lowest range of the thermometer, &c.—Continued.

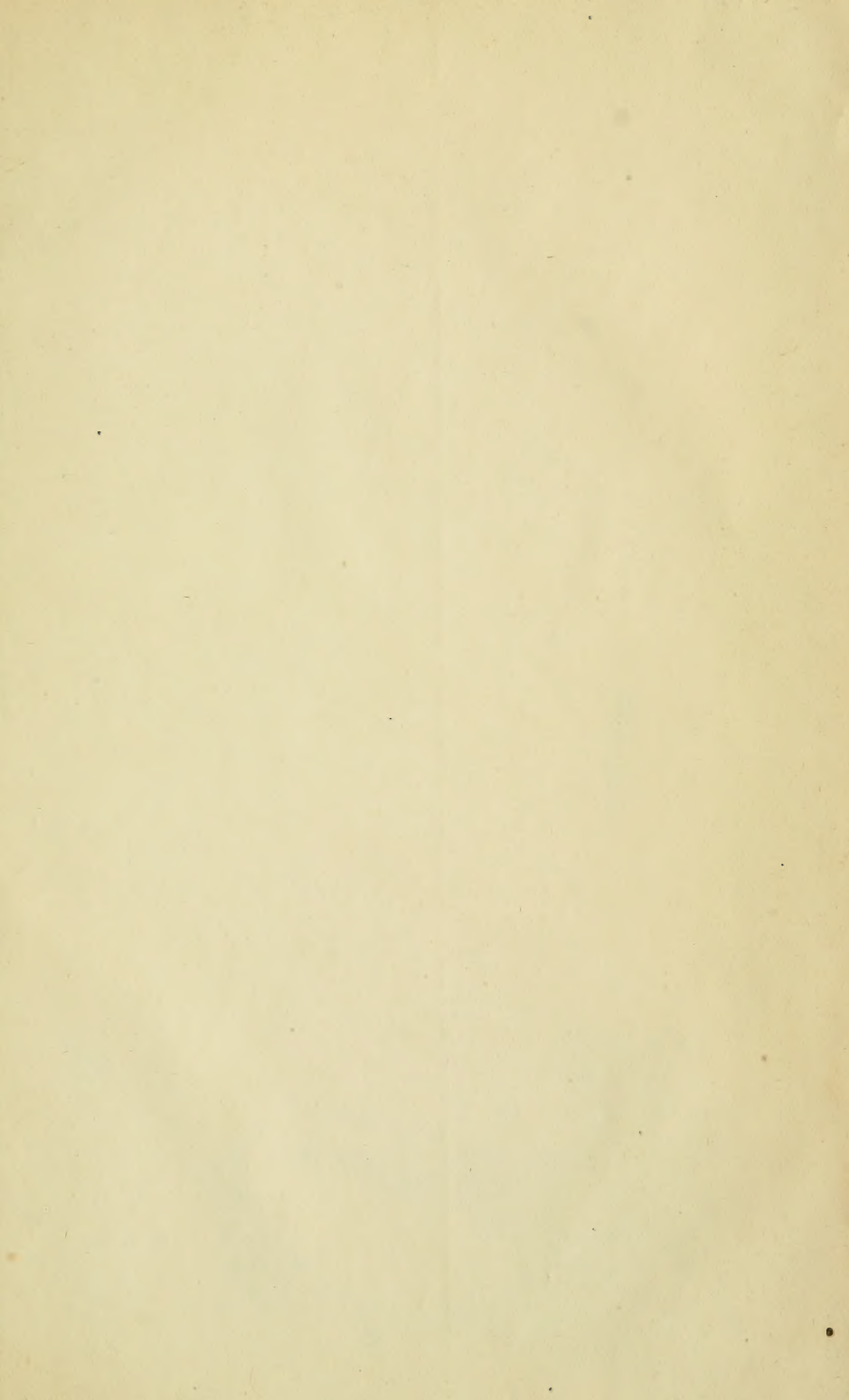
| State and station. | County. | Observer. | Date. | Maximum temperature. | Date. | Minimum temperature. | Mean temperature. | Rain and melted snow. |
|--------------------|-------------|------------------------|---------------------|----------------------|--------|----------------------|-------------------|-----------------------|
| INDIANA—Cont'd. | | | | | | | | |
| Vevay | Switzerland | Chas. G. Boerner | 27 | 80 | 22 | 39 | 58.1 | 2.43 |
| Mt. Carmel | Franklin | J. A. Applegate | 9 | 74 | 31 | 38 | 57.7 | 1.50 |
| Spiceland | Henry | Wm. Dawson | 16, 25 | 76 | 51 | 33 | 53.7 | 4.06 |
| Laconia | Harrison | Adam Crozier | 27 | 82 | 31 | 39 | 58.3 | 2.86 |
| Knightstown | Rush | D. Deem | 3, 16, 17 24, 25 | 74 | 31 | 31 | 56.4 | 4.62 |
| Indianapolis | Marion | E. Hadley, M.D. | 27 | 74 | 31 | 33 | 55.8 | 2.93 |
| La Porte | La Porte | F. G. Andrew | 24 | 76 | 31 | 36 | 55.0 | 2.60 |
| Rensselaer | Jasper | Dr. J. H. Loughridge | 9 | 75 | 31 | 30 | 52.6 | 4.50 |
| Annapolis | Park | Dr. B. C. Williams | 27 | 79 | 31 | 28 | 55.5 | 3.10 |
| Merom | Sullivan | B. F. McHenry | 16, 27 | 78 | 31 | 33 | 59.3 | 2.50 |
| New Harmony | Posey | John Chappellsmith | 26 | 77 | 22 | 38 | 58.8 | 2.69 |
| Averages | | | | | | | 56.5 | 3.11 |
| ILLINOIS. | | | | | | | | |
| Chicago | Cook | J. G. Langguth, jr | 3, 24 | 77 | 31 | 34 | 56.5 | 2.43 |
| Near Chicago | do | Samuel Brookes | 24 | 80 | 31 | 29 | 54.9 | |
| Evaston | do | Prof. O. Marcy | 23 | 72 | 31 | 32 | 53.8 | 4.39 |
| Marengo | McHenry | J. W. James | 1 | 73 | 31 | 26 | 50.2 | 3.14 |
| Charleston | Coles | Charles Gramesly | 15, 16, 27 | 77 | 31 | 30 | 54.9 | 3.46 |
| Mattoon | do | W. E. Henry | 27 | 75 | 31 | 35 | 56.7 | 3.50 |
| Aurora | Kane | Dr. A. Spaulding | 15, 23, 24 | 72 | 31 | 28 | 51.9 | 4.63 |
| Louisville | Clay | Dr. D. H. Chase | 15 | 82 | 31 | 34 | 59.0 | 3.50 |
| Belvidere | Boone | G. B. Moss | 24 | 76 | 31 | 27 | 51.3 | 3.37 |
| Ottawa | La Salle | Mrs. E. H. Merwin | 15 | 78 | 31 | 24 | 55.0 | 4.29 |
| Decatur | Macon | Timothy Dudley | 27 | 72 | 31 | 34 | 56.3 | 3.30 |
| Pana | Christian | Thos. Finley, M.D. | 27 | 76 | 31 | 30 | 56.3 | 2.40 |
| Winnebago | Winnebago | J. W. & Miss Tolman | 1, 24 | 72 | 31 | 26 | 50.4 | 2.75 |
| Rochelle | Ogle | | 2, 15 | 74 | 31 | 26 | 50.6 | |
| Wyand | Bureau | E. S. & Miss Phelps | 24 | 78 | 31 | 28 | 53.5 | 3.02 |
| Hennepin | Putnam | Ethan Osborn | 24 | 77 | 31 | 30 | 53.3 | 4.20 |
| Do | do | Smiley Shepherd | 15 | 76 | 31 | 29 | 52.0 | |
| Peoria | Peoria | Ered. Brendel | 15 | 79 | 31 | 31 | 55.4 | 4.27 |
| Havana | Mason | J. Cochrane | 15 | 80 | 31 | 30 | 53.1 | 3.95 |
| Waterloo | Monroe | Dr. Chas. Jozefe | 27 | 78 | 31 | 33 | | |
| Dubois | Washington | Wm. C. Spencer | 27 | 81 | 21 | 37 | 59.5 | 2.38 |
| Galesburg | Knox | Prof. W. Livingston | 15, 24 | 75 | 31 | 31 | 55.2 | 4.46 |
| Manchester | Scott | Dr. J. Grant | 24, 25 | 78 | 31 | 30 | 57.0 | 2.43 |
| Mt. Sterling | Brown | Rev. A. Duncan | 14, 15 | 78 | 31 | 32 | 56.8 | 3.15 |
| Andalusia | Rock Island | E. H. Bowman, M. D. | 15, 23, 24 | 74 | 22, 31 | 31 | 53.6 | |
| Oquawka | Henderson | H. N. Patterson | 15 | 81 | 31 | 35 | 56.1 | 4.12 |
| Augusta | Hancock | S. B. Mead, M. D. | 15 | 78 | 31 | 30 | 54.5 | 5.20 |
| Warsaw | do | B. Whittaker | 15 | 84 | 31 | 35 | 55.6 | 5.08 |
| Averages | | | | | | | 54.6 | 3.68 |
| WISCONSIN. | | | | | | | | |
| Sturgeon Bay | Dove | R. M. Wright | 2 | 72 | 26 | 32 | 51.0 | 4.30 |
| Manitowoc | Manitowoc | Jacob and Miss C. Lips | 1, 24 | 70 | 31 | 32 | 51.6 | 1.60 |
| Hingham | Sheboygan | John De Lyser | 1 | 75 | 31 | 30 | 51.2 | |
| Milwaukee | Milwaukee | I. A. Lapham, LL. D. | 24 | 73 | 31 | 30 | 51.9 | 1.99 |
| Geneva | Walworth | William H. Whiting | 2, 24 | 75 | 31 | 27 | 49.6 | 4.05 |
| Embarrass | Waupaca | Edward E. Breed | 2, 23 | 74 | 21 | 30 | 48.1 | 1.59 |
| Rocky Run | Columbia | W. W. Curtis | 2 | 73 | 31 | 28 | 50.8 | 0.68 |
| Madison | Dane | W. W. Daniels | 1 | 70 | 31 | 29 | 50.6 | 2.04 |
| Edgerton | Rock | H. J. Shints | 1 | 84 | 31 | 27 | 53.0 | 1.30 |
| Mosinee | Marathon | John O'Donoghue | 1 | 75 | 31 | 22 | 44.8 | 3.25 |
| Baraboo | Sauk | M. C. Waite | 2 | 73 | 31 | 28 | 50.6 | 2.75 |
| Tunnel City | Monroe | Rev. George Pegler | 1, 2 | 80 | 31 | 26 | 49.6 | 0.70 |
| Bayfield | Bayfield | Andrew Tate | 2 | 74 | 18, 31 | 28 | 47.4 | |
| Averages | | | | | | | 50.0 | 2.30 |
| MINNESOTA. | | | | | | | | |
| Beaver Bay | Lake | C. Wieland | 13 | 80 | 31 | 26 | 47.3 | 0.95 |
| St. Paul | Ramsey | Rev. A. B. Paterson | 2 | 81 | 31 | 21 | 48.2 | 1.95 |
| Minneapolis | Hennepin | William Cheney | 1 | 80 | 31 | 20 | 47.0 | 2.05 |
| Sibley | Sibley | C. W. & C. E. Woodbury | 2 | 79 | 31 | 16 | 46.2 | 0.50 |
| Koniska | McLeod | T. M. and M. H. Young | 2 | 76 | 31 | 20 | 45.3 | 1.10 |

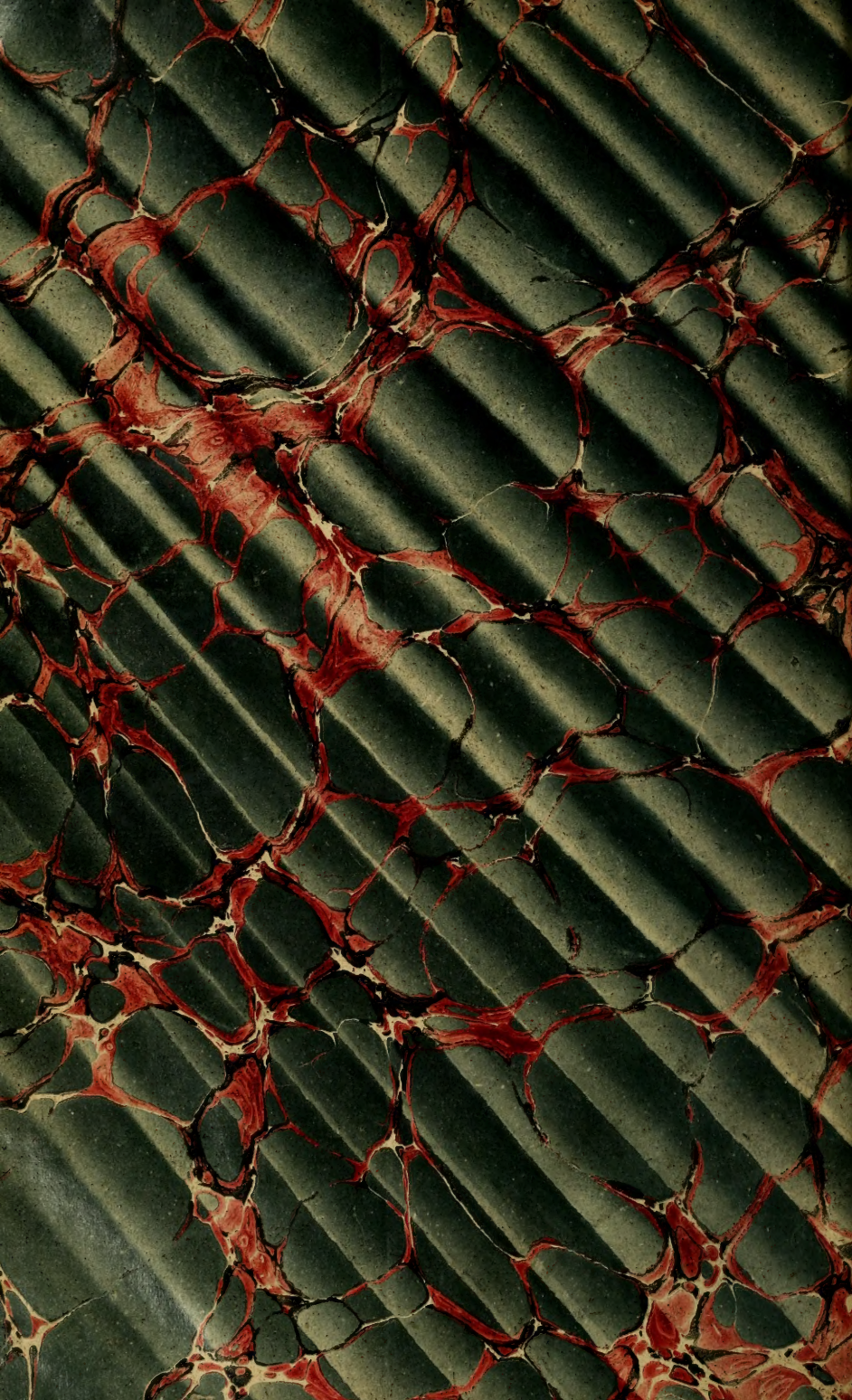
Table showing the highest and lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum temperature. | Date. | Minimum temperature. | Mean temperature. | Rain and melted snow. |
|----------------------|-------------|------------------------|-------------------|----------------------|--------|----------------------|-------------------|-----------------------|
| MINNESOTA—Cont'd. | | | | | | | | |
| Litchfield | Meeker | H. L. Wadsworth | 1, 2 | 78 | 25, 31 | 26 | 46.2 | 1.10 |
| New Ulm | Brown | Charles Roos | 2 | 82 | 31 | 26 | 49.0 | 0.73 |
| Madelia | Watonwan | W. W. Murphy | 2 | 86 | 31 | 24 | 48.6 | 0.75 |
| Averages | | | | | | | 47.2 | 1.14 |
| IOWA. | | | | | | | | |
| Clinton | Clinton | Prof. P. J. Farnsworth | 24 | 79 | 30, 31 | 28 | 51.8 | 2.50 |
| Dubuque | Dubuque | Asa Horr, M. D. | 1 | 72 | 31 | 26 | 50.7 | 1.22 |
| Monticello | Jones | Rufus P. Smith | 1 | 82 | 18, 31 | 26 | 51.8 | 1.55 |
| Bowen's Prairie | do | Samuel Woodworth | 1, 2 | 76 | 31 | 22 | 50.9 | 1.35 |
| Muscatine | Muscatine | J. P. Walton | 1 | 72 | 31 | 23 | 52.1 | 3.95 |
| Fort Madison | Lee | Daniel McCready | 15, 24 | 73 | 18 | 32 | 54.2 | 4.68 |
| Guttenberg | Clayton | J. P. Dickerson | 1 | 78 | 18, 22 | 25 | 49.3 | — |
| Mount Vernon | Linn | Prof. A. Collins | 1 | 76 | 31 | 24 | 50.1 | — |
| Iowa City | Johnson | Prof. T. S. Parvin | 23 | 75 | 31 | 25 | 51.8 | 3.16 |
| Independence | Buchanan | George Warne, M. D. | 1 | 77 | 31 | 24 | 49.7 | 0.90 |
| Near Independence | do | Mrs. D. B. Wheaton | 1, 2, 23 | 76 | 31 | 26 | 50.0 | 1.00 |
| Rockford | Floyd | H. Wadley | 1 | 75 | 31 | 26 | 50.8 | — |
| Algona | Kossuth | James H. Warren | 2 | 75 | 31 | 24 | 47.3 | — |
| Webster City | Hamilton | Clayton I. Croft | 2 | 78 | 31 | 22 | 48.1 | 2.06 |
| Boonesboro | Boone | E. Babcock | 2 | 76 | 31 | 23 | 48.3 | 2.94 |
| Fontanelle | Adair | A. F. Bryant | 2 | 79 | 31 | 27 | 51.1 | 4.63 |
| Grant City | Sac | Mr. and Mrs. E. Miller | 2 | 80 | 31 | 30 | 50.0 | 0.65 |
| Sac City | do | D. B. Nelson | 1, 2 | 77 | 28, 31 | 32 | 48.3 | — |
| Logan | Harrison | Jacob T. Stern | 1, 2 | 74 | 18 | 25 | 51.4 | 1.10 |
| Woodbine | do | D. R. Witter | 2 | 82 | 31 | 20 | 50.0 | 2.03 |
| West Union | Fayette | Frank McClintock | 1 | 88 | 31 | 24 | 51.4 | 1.95 |
| Averages | | | | | | | 50.4 | 2.23 |
| MISSOURI. | | | | | | | | |
| St. Louis University | St. Louis | Rev. F. H. Stuntebeck | 27 | 79 | 31 | 37 | 59.2 | 3.34 |
| Allenton | do | A. Fendler, M. D. | 15 | 85 | 31 | 29 | 56.8 | 4.13 |
| Hematite | Jefferson | John M. Smith | 24 | 85 | 31 | 29 | 57.4 | 4.45 |
| Hannibal | Adams | F. J. Hearne | 15 | 80 | 18, 31 | 34 | 55.5 | 4.90 |
| Rolla | Phelps | Homer Ruggles | 15 | 81 | 31 | 30 | 56.9 | 3.56 |
| Jefferson City | Cole | N. de Wyl | 15 | 82 | 31 | 33 | 60.0 | — |
| Kansas City | Jackson | S. W. Salisbury | 24 | 78 | 31 | 30 | 55.6 | 6.85 |
| Oregon | Holt | Wm. Kaucher | 1 | 82 | 31 | 33 | 56.1 | 6.14 |
| Caroling | do | Horace Martin | 23 | 82 | 31 | 30 | 54.7 | 5.65 |
| Averages | | | | | | | 56.9 | 4.88 |
| KANSAS. | | | | | | | | |
| Atchison | Atchison | Dr. H. B. & Miss Horn | 2 | 79 | 31 | 28 | 56.2 | 9.20 |
| Williamstown | Jefferson | Cotton & Adams | 2 | 86 | 31 | 32 | 58.5 | 7.95 |
| Leavenworth | Leavenworth | Dr. J. Stayman | 1, 2 | 80 | 17 | 34 | 56.8 | 9.85 |
| Olathe | Johnson | Watts Beckwith | 1 | 79 | 31 | 26 | 55.9 | 6.10 |
| Baxter Springs | Cherokee | Ingraham & Hyland | { 3, 14, 15, 26 } | 80 | 20 | 36 | 62.4 | 7.20 |
| Lawrence | Douglass | Prof. F. H. Snow | 1 | 79 | 31 | 32 | 56.5 | 6.96 |
| Holton | Jackson | Dr. James Watters | 2 | 87 | 22 | 32 | 55.8 | 7.25 |
| State Agr'l College | Riley | Prof. B. F. Mudge | 23 | 78 | 31 | 30 | 56.6 | 5.06 |
| Council Grove | Morris | A. Woodworth, M. D. | 2 | 80 | 20, 31 | 23 | 60.5 | 8.45 |
| Douglass | Butler | Dr. W. M. Lamb | 5 | 82 | 31 | 32 | 57.2 | 6.45 |
| Averages | | | | | | | 57.6 | 7.45 |
| NEBRASKA. | | | | | | | | |
| Omaha Mission | Blackbird | Rev. Wm. Hamilton | 9 | 78 | 18 | 32 | 54.1 | 0.77 |
| De Soto | Washington | Charles Seltz | 2 | 79 | 31 | 29 | 50.8 | 0.88 |
| Bellevue | Sarpy | Mrs. E. E. Caldwell | 2 | 79 | 31 | 30 | 53.7 | 2.30 |
| Nebraska City | Otoe | P. Zahner | 1, 2, 23 | 79 | 31 | 28 | 53.4 | 2.55 |
| New Castle | Dixon | Louis H. Smith | 13 | 69 | 18 | 23 | — | — |
| Averages | | | | | | | 53.0 | 1.63 |

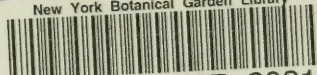
Table showing the highest and lowest range of the thermometer, &c.—Continued.

| State and station. | County. | Observer. | Date. | Maximum tem- perature. | Date. | Minimum tem- perature. | Mean tempera- ture. | Rain and melted snow. |
|--------------------|-----------------|--------------------------|-------|---------------------------|-----------------------|---------------------------|------------------------|--------------------------|
| UTAH. | | | | | | | | |
| Coalville..... | Summit..... | Thomas Bullock..... | 3 | 82 | 29, 30 | 23 | 46.0 | In. |
| CALIFORNIA. | | | | | | | | |
| Monterey..... | Monterey..... | C. A. Canfield, M. D.... | 6 | 90 | 24 | 40 | 58.5 | 0.46 |
| Chico..... | Butte..... | W. F. Cheney, M. D.... | 7 | 99 | { 18, 19, 27, 29 } | 40 | 63.8 | 1.10 |
| Watsonville..... | Santa Cruz..... | A. J. Compton, M. D.... | 15 | 98 | 25 | 36 | 61.2 | 0.30 |
| Cahoto..... | Mendocino..... | A. W. Thornton, M. D.... | 7 | 94 | 26 | 31 | 63.0 | 0.00 |
| Visalia..... | Tulare..... | James W. Blake..... | 7 | 90 | 16, 19 | 40 | 61.1 | 0.86 |
| Averages..... | | | | | | | 61.5 | 0.91 |
| MONTANA. | | | | | | | | |
| Deer Lodge City... | Deer Lodge... | Granville Stuart..... | 3 | 81 | 24 | 6 | 39.5 | 0.66 |
| COLORADO. | | | | | | | | |
| Denver..... | Arapahoe..... | Byers & Sopris..... | 1 | 83 | 27 | 27 | 47.8 | 0.68 |
| OREGON. | | | | | | | | |
| Astoria..... | Clatsop..... | Louis Wilson..... | 5, 6 | 67 | 25 | 38 | 52.2 | 1.82 |
| Eola..... | Polk..... | T. Pearce..... | 6, 8 | 72 | 25, 27 | 28 | 48.1 | 0.90 |





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